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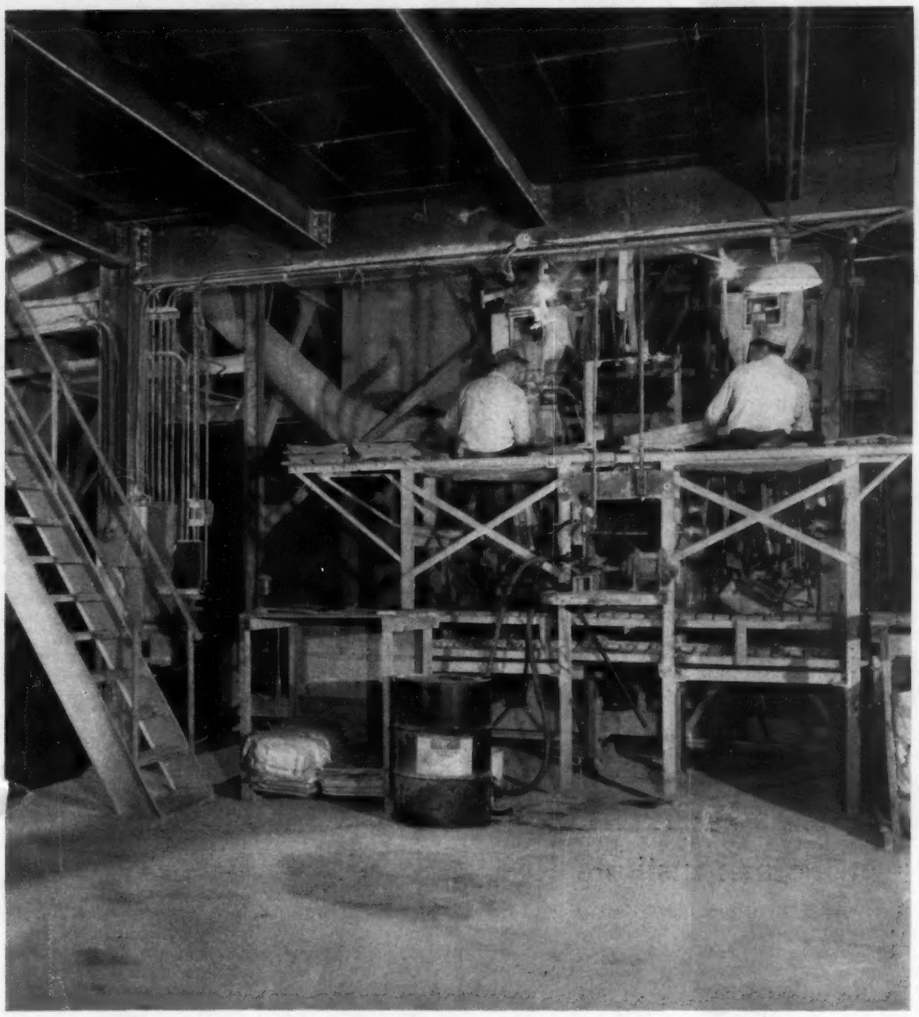

CONTROL THAT DUST!—Plants all round the country are becoming more and more dust control conscious as a means to better efficiency within the facility. Above is a typical packaging section of fertilizer plant where special efforts are made to collect dust and to keep it under control. The problem is not a simple one, however. Dust from fertilizer manufacturing has a particular defiance of control.

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Control of Fertilizer Dust Difficult Due To Corrosive Effects on Metal Equipment

AN IMPORTANT decision on how far he should go in halting the escape of dust and fumes from the plant faces every fertilizer manufacturer. The problem becomes more acute almost daily, and plant food producers are sharpening pencils to determine whether their particular situation warrants the expenditure necessary to install equipment to control dust and fumes.

Admittedly, purchase of such equipment is a matter requiring serious consideration and weighing of factors. Still, most manufacturers in evaluating the situation, come to realize that the position of the industry has changed sharply over the period of a relatively few years. Factors influencing this change are not difficult to find. Here are a few of the more important ones:

- **Loss of costly raw materials.**
- **Municipal expansion and growth of residential areas around plants.**
- **Increased cost of labor and maintenance as a result of dust contamination.**
- **Increasing hazardous work conditions.**

Unlike most industrial air contaminants, fertilizer dust exhibits all of the characteristics which make dust collection difficult. It is hot, moist, partially water soluble, corrosive, extremely fine, hygroscopic, disagreeable to the sense of smell, and has a tendency to stick to and build up on almost any surface.

The wide spread in particle diameter of fertilizer dust makes it difficult to select equipment which will provide high degrees of efficiency over the full range of dust particle size. Thus when determining the requirements for selecting suitable equipment, it should be kept in mind that the function of all air cleaning equipment is to remove contaminants from air or gas streams. There are different requirements in various indus-

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Capital Investment Per Each Chemical Worker Keeps High

MCA Figures Say Cost Per Production Worker May Come to $42,000

WASHINGTON — Capital investment per production worker in the Chemicals and Allied Products Industry for 1960 is expected to reach a new high of about $42,000, according to a recent estimate by the Manufacturing Chemists' Assn.

While the 1960 per-worker investment figure for all manufacturing industry is not yet available, a look at the National Industrial Conference Board figures for 1950-57 seemingly indicates that the chemical industry's investment will be about twice that of all manufacturing. The board has not yet released figures beyond 1957.

For the eight-year period, NICB figures show that the rate of chemical industry investment consistently has been nearly twice that of all manufacturing. For 1950, chemical investment was reported at $21,368 per worker, compared to $10,423 for all manufacturing. In 1952, the figures stood at $23,675 and $11,896 respectively. Investment for 1957 reached $30,933 for the chemical industry and $15,866 for all manufacturing.

FMC Names John Rodda To Administrative Post

NEW YORK — John Rodda has been named assistant to the president of Food Machinery & Chemical Corp. and will be located in Washington, D.C., the company has announced. Mr. Rodda, formerly manager of the Fairfield Chemical Co., a division of FMC, will direct the activities of four divisions in his Washington location. These divisions include Machinery, Ordnance, Central Engineering and Chemical.

Mr. Rodda has been with FMC and predecessor companies since 1945 at which time he joined U.S. Industrial Chemicals, which was later acquired by National Distillers & Chemical Corp. This firm in turn became associated with FMC in 1954 and three years later, Mr. Rodda became manager of Fairfield Chemical Co.

FMC's headquarters remain in San Jose, Cal., with J. M. Hait, president, in charge.

Succeeding Mr. Rodda as manager of the Fairfield division, is George Kerbey, formerly sales manager. He has been with FMC since 1954 and up to that time had been in chemical sales and held positions in the U.S. Department of Agriculture. Mr. Kerbey is currently also chairman of the education committee of the insecticide division of Chemical Specialties Manufacturers' Assn. He will continue to make his headquarters in New York City.

Stepan Increases Dividend At End of 1960 Year

NORTHFIELD, ILL.—Directors of Stepan Chemical Co. declared an increased stock dividend of 5%, paid Dec. 29 to holders of record Dec. 15. In each of the past two years the company paid stock dividends of 4%.

Alfred C. Stepan, Jr., president, said the increase reflects "the excellent year the company had despite the apparent downturn in the economy."

He said the company, a diversified producer of a wide line of chemicals, reported nine months earnings of $1.34 a share, more than 48% above the 91¢ earned in the same period in 1959.

U.S. Pesticide Shipped to All Parts of World in '60

WASHINGTON — U.S. exports of pest control products were shipped to nearly all areas of the world during the first half of 1960, according to a report just issued by the U.S. Department of Commerce, Business and Defense Services. Extensive research programs resulting in a wide range of quality products, combined with the joint efforts of export managers and salesmen, have developed markets for U.S. pesticides on every continent, the report says.

The Federal Government, through the Departments of State and Commerce is currently urging industry people to advise it how it might assist them in increasing exports. A program to increase pesticide exports is presently under way.

Here are the figures on pesticide

Turn to **PESTICIDES** page 39

New Records Set For Sulfur Output in '61

NEW YORK—The free world's sulphur industry set an impressive list of new records in 1960, according to a year-end statement by Claude O. Stephens, president and chief executive officer of Texas Gulf Sulphur Co.

According to Mr. Stephens:

World production and consumption of sulphur hit new highs.

U.S. consumption reached a new peak.

U.S. exports topped their previous highs set in 1956.

U.S. production of sulphur by the Frasch method climbed again, reversing its three-year trend of declining production.

New production records were set in France and Canada.

"By and large, none of these new records represented increases of any great magnitude," Mr. Stephens said, "but in a year generally characterized by faltering production indexes, we are heartened by the performance of the sulphur industry. This trend reinforces our confidence in the long-term growth of the sulphur industry in the 60's.

"We also expect 1961 to be a year which sees a trend toward the firming of prices in world sulphur markets—a trend which began toward the end of 1960." Mr. Stephens noted that over the past few years, increasing supplies from Mexico, Canada and France resulted in intense competition within the industry.

During 1960, he said, total world consumption of sulphur (in all forms) reached 17,500,000 long tons, compared with the previous record of 16,800,000 tons set in 1959. In the U.S. alone, consumption reached a peak of nearly 6,000,000 tons in 1960, compared with 5,925,000 tons in 1959.

Sulphur is widely used, but principally as sulphuric acid—in the fertilizer industry as well as in paper, oil refining, steel, textiles and rubber. Approximately three quarters of all domestic sulphur is produced by the Frasch method, of which most of the producers are centered on the Gulf coast in Texas and Louisiana.

Production of sulphur by the Frasch method in the U.S. over the last three years shapes up as follows:

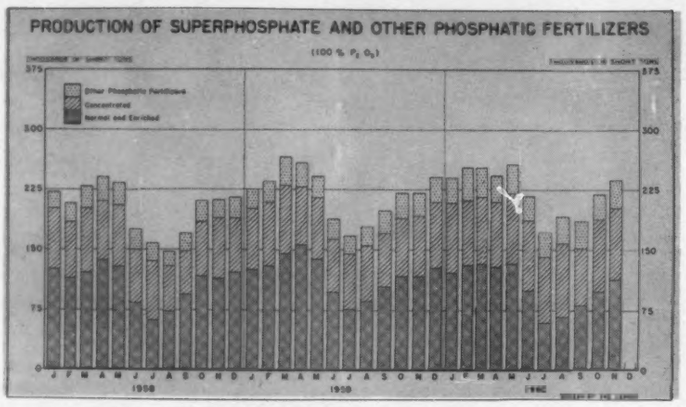
	Long tons
1960	4,920,000
1959	4,554,000
1958	4,643,000

U.S. exports of sulphur produced by the Frasch method reached 1,750,000 long tons in 1960, compared with 1,612,000 in 1959.

Actual sales of U.S. Frasch sulphur were somewhat lower in 1960: 5,100,000 tons vs. 5,182,000 in 1959.

The U.S. sulphur industry maintains the world's major stocks of Frasch-produced sulphur. At the end of 1960, U.S. stocks were near 3,600,000 long tons, down slightly from the previous year-end figures of 3,810,000 long tons.

The most noteworthy marketing development of 1960 was the fast-growing trend toward shipping sulphur in molten form, Mr. Stephens pointed out. This method delivers an uncontaminated, dustless product to the consumer in a form ready for use. Mr. Stephens said that his company will have, by February, 1961, four centrally located terminals in the eastern U.S., to handle molten sulphur. The central shipping point for molten sulphur is Texas Gulf's new shipping terminal in Beaumont, Texas, opened in 1960.



SUPERPHOSPHATE PRODUCTION—According to figures just released by the U.S. Department of Commerce, bureau of the census, United States production of superphosphate and other phosphatic fertilizers during November, 1960, amounted to 236,784 short tons (100% P_2O_5), compared with November, 1959 output of 221,540 short tons. Shipments of superphosphate and other phosphatic fertilizers during the month totaled 132,995 short tons, or 3% above the volume shipped the corresponding month of 1959. Stocks held by producing plants as of November 30, 1960 totaled 424,294 short tons, 14% more than those held on October 31, 1960. These monthly figures (including percentage changes) are unadjusted for seasonal variation and number of working days.

Potash Deliveries During Third Quarter of 1960 Down, Potash Institute Reports

WASHINGTON—Deliveries of potash for agricultural purposes in the U.S., Canada, Cuba, Puerto Rico and Hawaii by the eight principal American producers and also the importers totaled 2,810,762 tons of salts containing an equivalent of 1,643,384 tons K_2O during the first nine months of 1960, according to the American Potash Institute.

This was a decrease of less than 1% in salts and K_2O under the same period in 1959. Continental U.S. took 1,532,685 tons K_2O; Canada, 628,323 tons; Cuba, 15,217 tons; Puerto Rico, 16,952 tons, and Hawaii, 16,207 tons K_2O. These figures include imports of 150,697 tons K_2O for only the first six months of the year. Exports to other countries were 310,649 tons K_2O.

Deliveries of potash for non-agricultural purposes amounted to 116,323 tons K_2O, an increase of 8% over last year. Total deliveries for all purposes were 3,514,381 tons of salts containing an equivalent of 2,070,356 tons K_2O, an increase of 5% in salts and K_2O.

During the third quarter of 1960, deliveries for agricultural purposes were 212,780 tons K_2O in Continental U.S., 5,034 tons in Canada, 3,194 tons in Cuba, 705 tons in Puerto Rico and 5,164 tons in Hawaii making a total of 226,877 tons K_2O, a decrease of 46% under last year. Import figures for the third quarter of the calendar year are not available at this time. Exports of potash to other countries during the third quarter were 120,298 tons K_2O, an increase of 42% over last year. Deliveries of potash for non-agricultural purposes were 33,883 tons K_2O, an increase of 4% over last year. Total deliveries for the third quarter were 649,121 tons of salts containing an equivalent of 381,058 tons K_2O, a decrease of over 28% under last year in salts and 29% in K_2O.

HOW TO HANDLE THAT FERTILIZER BAG

Know how to lift and carry a filled multiwall bag? It is surprising how many plant employees do it the hard way, or the dangerous way. Here is what the experts recommend: One man should pick up the sack with his hands underneath it, preferably at diagonal corners. Two men should lift the sack with the hands underneath it, supporting the four corners.

Never grip or pull at the corners.

Never drag the sack across the floor.

Never, with a tied closure, pull at the closed end.

Never lift or drag a sewn gusseted sack by inserting fingers in the gussets underneath the sewn ends or in valve openings.

Carry the sack with the edge resting against the body, or flat on the shoulder.

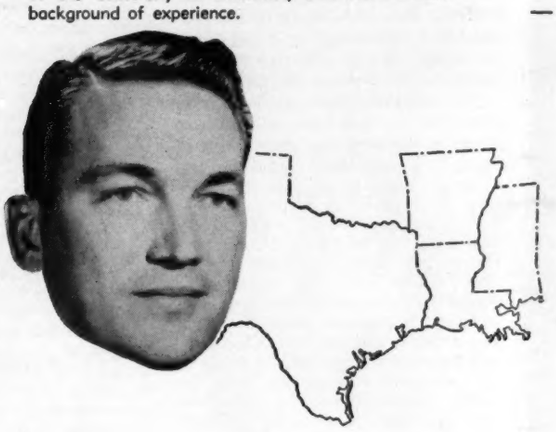
All-Time Safety Mark for Monsanto

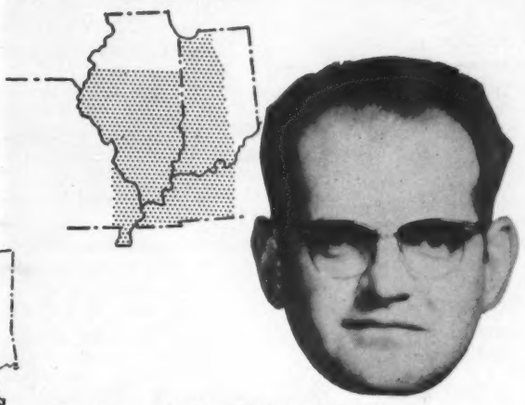
ST. LOUIS — Monsanto Chemical Co. set an all-time safety record during 1960 with an accident-frequency rate of .61 major injuries per million man-hours worked at its 38 locations, the company has announced.

The company's best former safety record of .69 major injuries per million man-hours worked was established in 1958. The 1959 all-chemical industry safety record, the latest reported by the National Safety Council, is 3.32 major injuries per million man-hours worked.

"WE HAVE BUT TWO PRODUCTS . . . POTASH AND SERVICE"

LAVOID HOLLOWAY
covers Arkansas, Louisiana, Mississippi, and Texas as P.C.A. Sales Representative. He is a graduate of the University of Arkansas, and has a solid background of experience.





WILLIAM "BILL" JOHN
now P.C.A. Sales Representative for portions of Illinois, Indiana, Kentucky and Missouri. A graduate of the University of Missouri, he has had extensive experience in the fertilizer industry.

Your Men on our payroll

These men are two of the members of the P.C.A. sales team serving the fertilizer industry. While they are on our payroll, their chief responsibility is to you. Selling potash is but part of their job; the most important part is furnishing you with whatever service and information you require . . . both have the experience and background to do the job well. The P.C.A. salesman is your man . . . make good use of him.

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Tips on Formulation And Heptachlor Given

By Eugene Ordas
Velsicol Chemical Corp.
Chicago, Ill.

EDITOR'S NOTE—*This is the first of Croplife's series of formulation articles to be written by basic producers of toxicants used in the pesticide field as a helpful gesture to the men responsible for formulating various pesticidal products.*

IN ALL PESTICIDE formulation, an appreciation for and practice of the following "do's" and "don'ts" are fundamental:

DO—know, study and understand:

1. *The intended use(s) of the product.*
2. *The method(s) of application of the product.*
3. *The chemical and physical properties of the basic pesticide.*
4. *The properties and behavior of the carriers, diluents, solvents and surfactants.*
5. *The recommended precautions required for safe handling of all formula ingredients.*

DON'T—compromise or short-cut:

1. *On quality of raw materials.*
2. *On equipment design and specification.*
3. *On operating procedures and process controls.*
4. *On operator skill and supervision.*

If high product quality is to be assured, strict adherence to these principles is highly recommended to the formulator.

Properties of Toxicants

The properties of technical chlordane and technical heptachlor, presented in Table 1, can be utilized profitably for the design and manufacture of typical formulations for general or specific uses and methods of application. They are guides to the proper selection of formula ingredients and preferred methods of processing.

Because of its complete miscibility in practical commercial solvents, and because it is a chemically stable, dense liquid, chlordane is an easy pesticide to formulate, liquid or dry. With kerosene as the solvent, and as little as 3 to 5% surfactant, emulsifiable concentrates containing 8 lb. of chlordane per gallon, are commonplace, and 10 and 12 lb. per gallon concentrates are technically feasible.

Its high density and fluidity, especially at slightly elevated (110-120° F.) temperatures make chlordane adaptable to spray impregnation upon dry carriers. Dry, powdered mineral carriers will absorb (by the rub-out method) 60 to 80% more chlordane by weight than vegetable or mineral oils. This makes it possible to formulate dust bases and wettable powders containing 40 to 50% technical chlordane when carriers such as certain montmorillonites, attapulgites and diatomaceous earths are used.

Because heptachlor is formulated on the basis of its actual heptachlor content, the total technical heptachlor in a formulation is about 135% by weight of the stated heptachlor content. This reduces the amount of inerts required. With special highly absorbent carriers such as synthetic silicas or silicates, the preparation of 40 to 50% heptachlor dust bases and wettable powders is possible. They may be prepared by impregnation or dry grinding. Liquid concentrates containing up to 3.3 lb. actual heptachlor per gallon in Xylene or Velsicol AR-60 are cold stable. The presence of the related compounds in technical heptachlor offsets a part of the solvent requirement. Chlordane and heptachlor are stable in the presence of acids and alkalis. They are stable to commonly used mineral carriers and diluents which are properly deactivated.

Dry Formulations

Carriers and diluents used for formulating pesticides are rarely pure mineralogical species. Therefore, within a given classification, differences in properties may be observed (see Table 2). Because of these differences, carriers and diluents used with chlordane and heptachlor should be tested for surface acidity with benzene - azodiphenylamine indicator solution and deactivated, if necessary, with Velsicol Deactivator H to pKa 1.5 or greater, either before or during formulation.

If thiophosphate esters such as malathion or methyl parathion are to be formulated with chlordane and heptachlor, the diluents and carriers should be deactivated to pKa 3.3 or greater and tested with dimethylaminoazobenzene indicator solution *before* adding the phosphates.

Dry concentrates of chlordane and heptachlor are generally prepared by the impregnation method. Field strength dusts may be prepared either by direct impregnation or, more conveniently, by letting down a concentrated dust base with a less costly diluent of the desired physical properties. The spiral ribbon mixer continues to be satisfactory for the manufacture of dust and powder type formulations.

The rotary or tumbler type of blender, which minimizes attrition and the formation of fines, has been widely adopted for preparing chlordane and heptachlor granular formulations of both high and low concen-

GO IMC'S DIRECT LINE...

fastest route to superior fertilizer ingredients

Picture this: You're a fertilizer ingredient buyer. Your busy season's ahead. You begin the routine . . . check the list of suppliers, schedule calls, hope for fewest conflicts. The parade begins. One salesman after another — all with products that claim basic specs . . . then your own lab evaluations, shipping dates, inventory control, handling and rehandling. And all the time you hope no one on the *long list* drops the ball. It's worry season for you.

Change the scene: IMC's salesman has the answer — a full line of fertilizer products. And all quality-controlled from mine to you. Want Super? It's on track — coarse, granular, run-of-pile. Potash? Which form — muriate, sulphate . . . sulphate with magnesium? Phosphate rock the way you want it . . . the grade and grind you need. And add phosphoric fertilizer solutions too.

Above all, the consistent, dependable service and quality of IMC products result in superior fertilizer ingredients that add to the effectiveness of your finished formulas . . . their selling appeal on the farm.

Next time it's your "worry season," give the go signal to your IMC salesman. He'll help keep you on track.

# of Chlordane by Makers

trations. By using the direct spray impregnation technique, concentrations as low as 2% active ingredient and up to 25% heptachlor and as high as 40% chlordane are readily prepared. For the higher granular concentrates the principal carriers are sorptive materials such as attapulgites.

Best results in impregnating granular carriers have been obtained when the blender has been loaded to about two-thirds of its volume. The design and positioning of the spray manifold are very important. Generally 4 to 8 nozzles of the wide-angle full-cone type are arranged in a plane which should be parallel to the plane of the carrier when the blender is in operation. The nozzle tips should be spaced as far from the surface as space will allow to give full coverage without permitting the spray to impinge upon the walls of the blender.

Liquid and Emulsifiable Concentrates

It is now possible to attain great flexibility in performance for a wide range of chlordane and heptachlor emulsifiable concentrates using paired emulsifiers to meet most specific and local requirements. The use of a versatile emulsifier pair, in addition, greatly simplifies the problems of emulsifier inventory control.

In the formulation of pesticide emulsifiable concentrates the hydrophile-lipophile balance of the emulsifier pair must be adjusted for each toxicant—solvent combination used and the range of water hardness likely to be encountered. For example, technical chlordane is relatively hydrophilic as compared to its usual solvent, kerosene and a 4 pound per gallon E.C. requires less hydrophilic emulsifier than an 8 pound per gallon E.C.

Heptachlor, slightly less hydrophilic than chlordane, is generally formu-

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TABLE 1. Typical Properties of Technical Chlordane and Technical Heptachlor

Property	Technical Chlordane	Technical Heptachlor
Appearance	Viscous amber liquid	Light tan waxy solid
Density	1.65 g./ml. at 60° F.	1.66 g./ml. at 77° F. 1.60 g./ml. at 160° F.
Melting Point (range)	...	115-165° F.
Freezing Point	Does not crystallize even at very low temp.	Slowly solidifies and crystallizes at room temp. (77° F.)
Assay	100% active	72% actual heptachlor 28% related cpds.
Solubility in		
Kerosene	Completely miscible	Low-moderate
Hvy. aromatic naphtha	" "	2 lb. actual at 0° F.
" " "	" "	3 lb. actual at 40° F.
" " "	" "	Miscible above 115° F.
Xylene	" "	4 lb. actual at 82° F.
"	" "	3.3 lb. actual at 40° F.
Velsicol AR-60	" "	4 lb. actual at 82° F.
" "	" "	3.3 lb. actual at 40° F.

TABLE 2. Ranges of Properties of Some Common Types of Pesticide Carriers and Diluents

Classification	Specific Gravity	Density[1] Loose lb./cu. ft.	Density[2] Packed lb./cu.ft.	Oil Sorption g./100 g.	Chlordane Sorption g./100 g.	Highest Practical Concentration % Chlordane	Hept.	Deact. H Required %
Diatomaceous earth..	1.9-2.1	6-10	10-17	100-200	187-272	50	50	1-5
Attapulgite	2.3-2.4	16-25	29-36	100	135-230	40-50	25	6-11
Montmorillonite[3]	2.3-2.8	16-54	18-64	23-70	80-160	5-40	5-25	4-12
Kaolinite	2.4-2.7	15-77	38-80	25-54	69-184	20-25	10-20	0-3
Pyrophyllite	2.6-2.8	28-35	52-62	25-50	76-90	5-10	5-10	0-1
Talc	2.6-2.9	28-46	26-63	24-40	60-73	5-10	5-10	0-1
Limestone ($CaCO_3$)..	2.7	40-55	80-96	5-18	....	5	5	0

Notes: [1]Scott Volumeter, [2]Mechanically tapped in graduated cylinder to equilibrium, [3]Includes bentonites.

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PRODUCTS FOR GROWTH

Federal Chemical Co. Becomes Division of National Distillers and Chemical Corp.

LOUISVILLE, KY. — Stockholders of Federal Chemical Co. on Dec. 28 voted nearly 97% of the outstanding stock in favor of a merger with National Distillers and Chemical Corp.

Of the 20,000 outstanding Federal common shares, over 96% were voted in favor of the merger; 97% of the 21,494 outstanding preferred shares also favored the merger.

For the Federal stock, National Distillers and Chemical will exchange a total of about 250,000 of its common shares at the approximate rate of eight National shares for each share of Federal common and about 4¼ National common shares for each Federal preferred share.

Federal Chemical manufactures mixed fertilizers at six plants: Louisville; Humboldt and Nashville, Tenn.; Danville, Ill.; Butler, Ind., and Columbus, Ohio. The 76-year-old firm has its headquarters in Louisville.

Roy F. Coppedge, Jr., president of National Distillers and Chemical, stated that he expected the merger to become effective early in January. "We regard this merger," he said, "as an important step in National's program of integration of its fertilizer chemicals.

"Since 1950 we have been manufacturing a growing number of industrial and agricultural chemicals in increasing volume. Included are such basic fertilizer raw materials as phosphoric acid, sulphuric acid, ammonia, and nitrogen solutions. Federal Chemical will enable us to bring these products directly to the consumer."

Mr. Coppedge noted that Federal Chemical will be operated under its present name and by its present management and operating personnel as a division of National Distillers and Chemical Corp., with Jefferson D. Stewart, Jr., as president.

National Distillers and Chemical is the second largest distiller in the United States, second largest producer of polyethylene resins and a major manufacturer of industrial chemicals, plastics, fertilizer and chemicals and special metals.

Legislative Changes Proposed by Group

SPOKANE, WASH. — Washington Liquid Fertilizer Dealers Assn. held its second annual meeting at the Davenport Hotel here recently and decided to cut its legislative teeth at the 1961 Washington legislature by seeking some beneficial changes in state fertilizer laws.

The association decided at its business session to go after changes in the state statutes to limit the amount of liability of the fertilizer dealer to the amount of the sale. The group will also seek a fertilizer lien law, a move which failed in the 1959 legislature before the dealers were organized. Revisions in the state safety code affecting handling of liquid chemicals will also be sought.

Fertilizer Trade Said to Increase Machinery Leases

CHICAGO — Long-term leasing of production and office equipment by fertilizer producers spurted ahead during 1960. Value of equipment leased during the year was $4.7 million, a gain of 81% over 1959, according to Robert Sheridan, president of Nationwide Leasing Co.

He said in a year-end statement that equipment leased by all industry last year totaled $530 million, to mark the first time leasing topped the half-billion mark. He predicted that leasing volume would reach $1 billion a year by 1962.

Mr. Sheridan said there were four major reasons for the rapid growth of equipment leasing in the fertilizer industry: (1) increased popularity of sale-leaseback transactions involving existing plant, (2) more equipment manufacturers have introduced lease plans for their products, (3) money remains tight, as evidenced by a 13% decline in corporate liquidity in the industry during the year, and (4) greater use of the open-end "master lease" under which companies can expand their leasing steadily, as the need for additional equipment arises.

Wisconsin Cooperative Sells Fertilizer Plant

MADISON, WIS.—The Wisconsin Farmco Service Co-op has sold its fertilizer manufacturing plant at Whitewater to the Federal Chemical Co. of Louisville, Ky., it was announced Jan. 5 by Percy Hardiman, president of Farmco and its parent organization, the Wisconsin Farm Bureau. The sale price was not disclosed.

Mr. Hardiman said the plant, built in 1951, would be transferred to the new owner Jan. 20. He also announced that Farmco plans to build five fertilizer service centers in Wisconsin areas, to sell fertilizer manufactured at its plants in Green Bay and Prairie du Chien.

MORE GRASSHOPPERS DUE IN 1961

FARGO, N.D. — Grasshoppers are expected to be a serious crop threat in North Dakota in 1961, according to Wayne J. Colberg, entomologist, agricultural extension service here. He reports that heavy egg laying was observed in several areas of the state, especially in the northwest during fall surveys. There was a large grasshopper population to lay eggs, and the mild fall favored a prolonged egg laying period.

Field margins, roadside ditches and weedy fields are especially infested, he said. Many soil bank fields with poor grass and legume cover are also heavily infested with eggs. In areas where good grass cover has been established, soil bank fields are not contributing to the overall grasshopper menace.

The 1961 control season may also be a little earlier than previous years as many of the eggs laid early in the fall may have considerable development of the young grasshoppers inside the egg. With a warm, early spring, grasshoppers could be showing up in early May in some areas.

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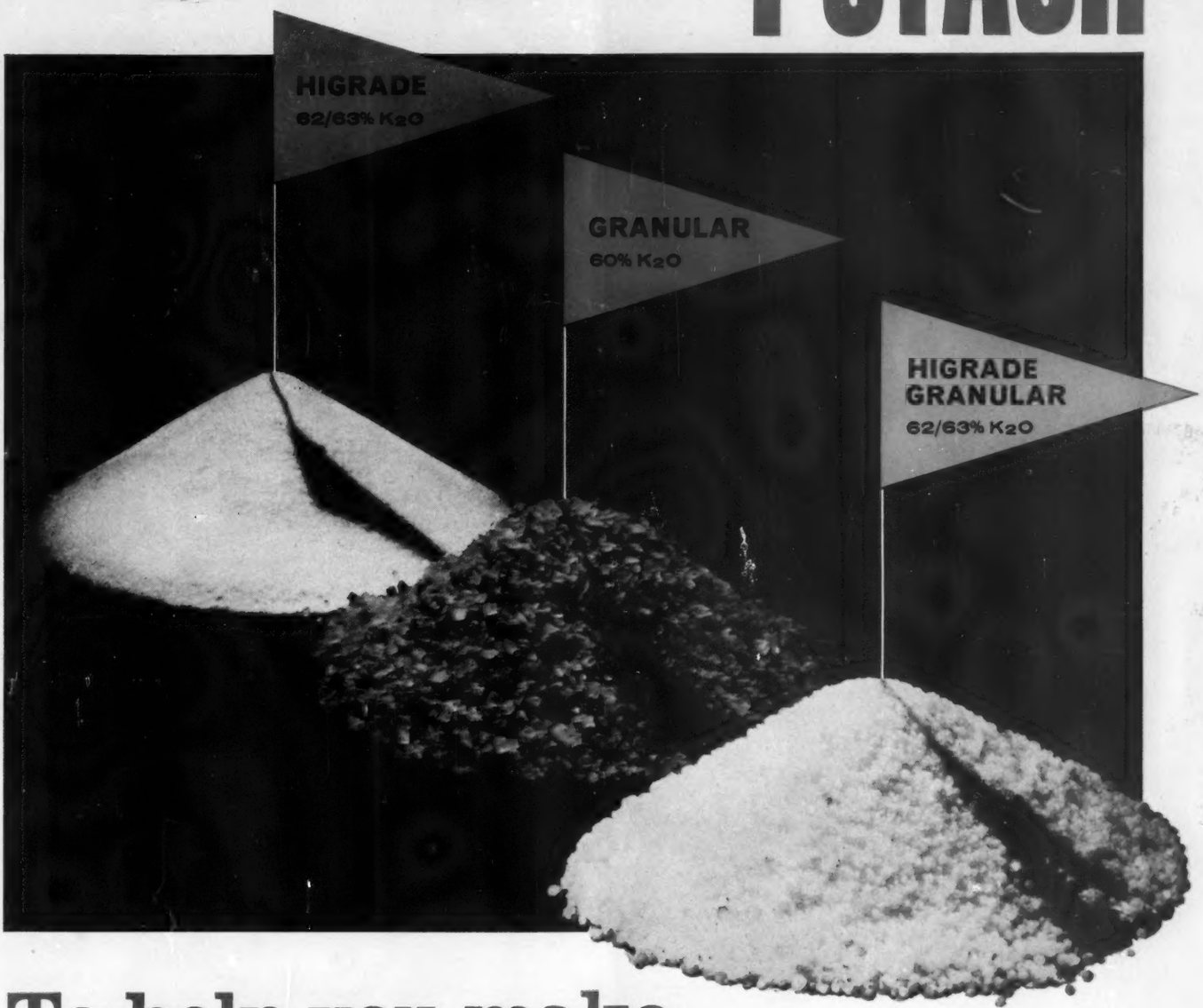

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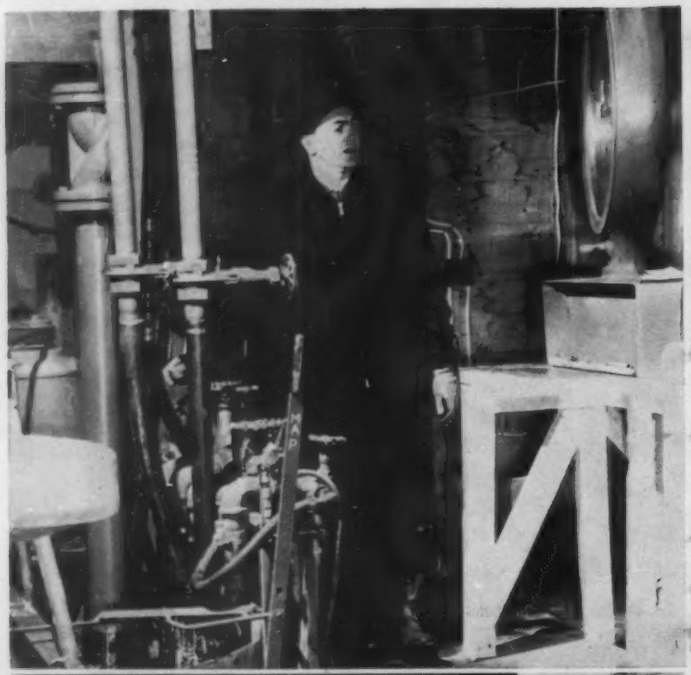


On Sloping Terrain . . .

Liquid Fertilizer Plant Uses Gravity Plus Power Pumps

UTILIZATION of the sloping terrain on which its plant is located has proved beneficial to the Marco Chemical Co.'s operation of a liquid fertilizer manufacturing plant at Clinton, Ill.

After its remodeling a few years ago, the plant now supplies a network of dealers in its marketing area with a complete range of plant food analyses in addition to nitrogen solutions for direct application. Its use of gravity flow plus power equipment has proved satisfactory in keeping the plant in constant operation with a minimum of down time.

In looking over the site where the plant was to be located, its management noted the natural slope of the land and designed the plant accordingly.

The building housing the mixing equipment and potash storage was elected on the crest of a slope. The reactor tank was sunk into the floor with the outlet on the bottom directly over a built-in concrete holding vat in a small compartment below. The outlet consists of an 8-in. diameter hole opened and closed by means of an air-activated cylinder. At completion of the mixing period, the contents of the 1,200 gal. mixing tank can be dumped quickly into the holding vat. The reactor can be immediately recharged with a minimum of delay.

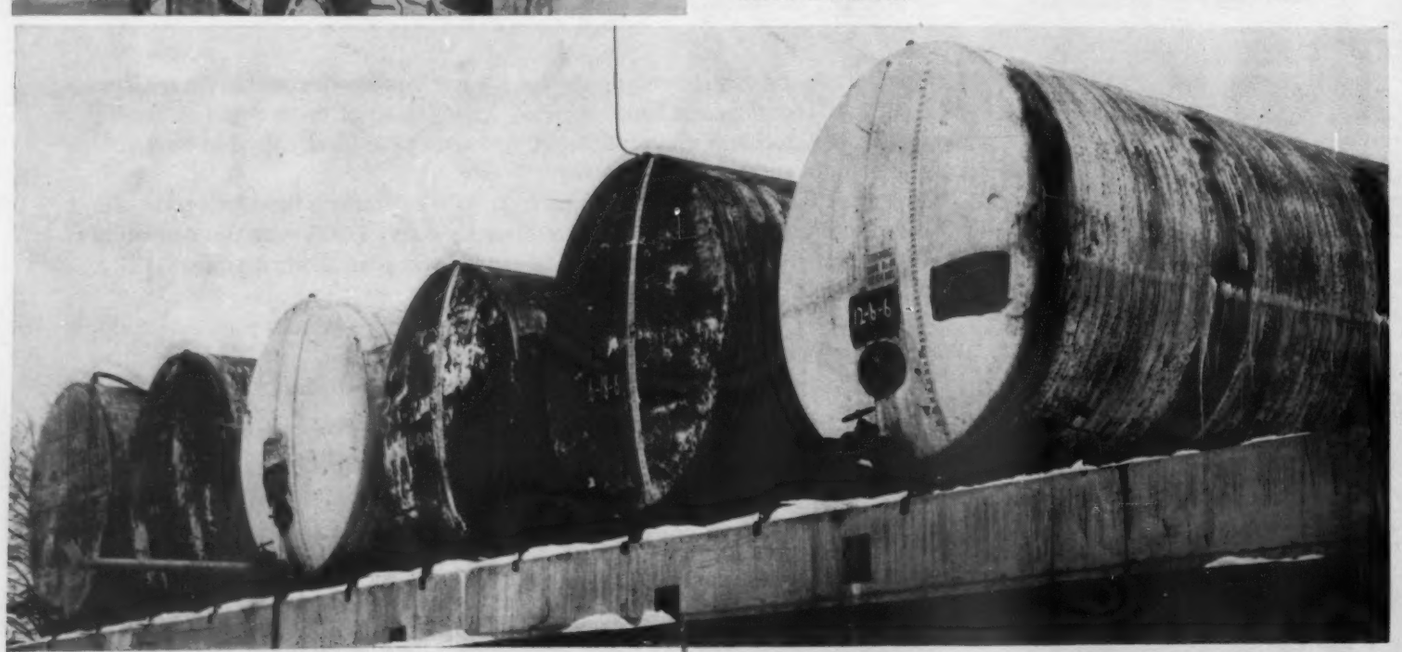
Nitrogen solution and other liquid ingredients in outside storage tanks at higher levels readily flow through metering devices into the mixing tanks. Gravity flow operation also was extended to the loading out area by placing storage tanks on a surface above the level of transports and other vehicles used for transporting the finished products.

To accomplish this, a concrete retaining wall was erected some distance down the slope extending from the building. The intervening space was filled in level with the building base. This provides a firm base for mounting storage tanks with their outlet ends flush with the outer edge of the wall overlooking the dock area.

Rapid filling is made possible by use of 4-in. diameter valves and hoses. At present, nine tanks, each holding a different analysis, are in place. Additional tanks are scheduled for mounting in the near future, reports Virgil Harbach, plant manager. A pump is used to move mixed batches from the holding vat into the proper storage tank.

After a year of operation, Mr. Harbach has nothing but praise for the system being used. He is particularly proud of his quick reactor emptying system.

AT ILLINOIS LIQUID PLANT—A plant designed to take advantage of its natural surroundings, thus utilizing gravity where possible, gives an unusual aspect to the Marco Chemical Co. at Clinton, Ill. In top photo, Virgil Harbach, plant manager, meters liquid ingredients into the reactor. Center photo shows potash being dumped into bin adjacent to mixing area. Amounts needed for each batch are weighed accurately on the other side of bin. Below are six of nine tanks presently in place at the loading-out area. The firm has ample space for mounting additional tanks as volume warrants it.



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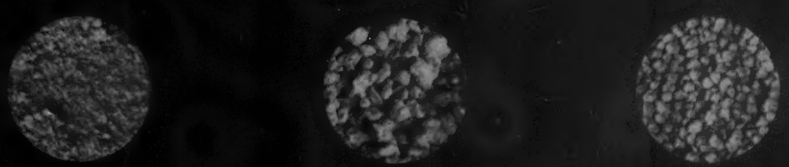

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INDUSTRY PERSONNEL NEWS

New Texas City Manager

NORFOLK, VA.—James A. Monroe, Smith-Douglass Co., Inc., vice president for operations, has announced the appointment of James F. Roe as manager of the company's Texas City, Texas, operation.

James F. Roe

Mr. Roe comes to Smith-Douglass from International Minerals and Chemical Corp., where he served as general manager of its Bonnie, Fla., chemical plant. Prior to employment with International Minerals and Chemical, he had extensive chemical production experience with Industrial Rayon Corp. and Monsanto Chemical Co.

Mr. Monroe also announced that Herman G. Powers, who has managed the Texas City plant since early 1959, would be transferred to the company's home office in Norfolk, Va., to become assistant to the production manager, fertilizer division.

Smith-Douglass acquired Texas City Chemicals, Inc., in 1956, and produces "Pelleform" brand ammonium phosphate fertilizers, "Dikal" brand feed phosphorus supplement, sulfuric acid and phosphoric acid at the complex chemical plant.

Production Coordinator and Plant Manager Appointed

J. R. Jones H. G. Beierl

MIDDLEPORT, N.Y.—Niagara Chemical Division of Food Machinery and Chemical Corp. has appointed J. R. Jones as production coordinator for its 20 plants in the United States, Canada, and Mexico. At the same time, H. G. Beierl was named to succeed him as manager of the division's plant at Middleport, N.Y.

As production coordinator, Mr. Jones will direct installation of new equipment and facilities and will work closely with Niagara plant managers and production superintendents to insure best performance, product quality, training, safety and the like. Mr. Jones served as plant manager at Middleport for the past four years, although for more than a year now he also was responsible for some division-wide production functions. He joined Niagara in 1945 as assistant chief chemist in the control laboratory at Middleport.

H. G. Beierl, who assumes the post of plant manager at Middleport, has been with Niagara since 1950. He began working as a chemist in the control laboratory, became chief chemist in 1956, and took the post of assistant plant production manager in 1958.

Technical Superintendent

NIAGARA FALLS, N.Y.—Jerome Wilkenfeld has been promoted to technical superintendent of the Niagara Falls plant of the Eastern Chemical Division, Hooker Chemical Corp., succeeding Walton B. Scott who held this position since 1950. Until his retirement on Feb. 1, Mr. Scott will be special assistant to Maynard L. Parker, works manager, who made the announcement.

Mr. Wilkenfeld, assistant technical superintendent since 1955, came to Hooker in 1943 upon graduation from City College of New York with a B.Ch.E. degree. After a few months as an operator in the research department, he was assigned to Hooker's Manhattan District Project as a control chemist, later becoming process supervisor. In 1945 he transferred to the process study group, becoming a group leader and then supervisor until 1955.

New IMC Researcher

SKOKIE, ILL.—Richard F. McFarlin has joined International Minerals & Chemical Corp. as supervisor of inorganic chemical research. He is assigned to the research laboratories at Mulberry, Fla. Mr. McFarlin, who had been senior research chemist in the Inorganic Division of Monsanto Chemical Co., St. Louis, received his M.S. and Ph.D. in inorganic-organic chemistry from Purdue University.

To Head Darling & Co.

CHICAGO—Nelson Morris II has been elected president of Darling & Co., to succeed William H. McCausland, who has become chairman of the board.

Mr. Morris joined the firm in 1946. He was general manager of the Buffalo, N.Y. plant from 1952 to 1954 and then returned to Darling's Chicago headquarters as assistant to the vice president in charge of sales. He has been vice president in charge of sales for the past four years.

In other management promotions, Charles C. "Chuck" Jensen has been named general manager of the mineral feed and fertilizer divisions. He formerly was sales manager of the feed division. Mr. Jensen joined Darling in 1949 after graduating from Michigan State University.

Named Vice President

OMAHA, NEB.—Farm Fertilizers, Inc., Omaha, has appointed Arthur C. Jetter as vice president and secretary of the company, it has been announced by Richard E. Bennett, president.

Mr. Jetter was formerly secretary and assistant treasurer of Farm Fertilizers. He has been with the firm for thirteen years.

Succeeding Mr. Jetter as assistant treasurer is Armwell J. Joines, whose appointment to this post was announced at the same time as that of

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Mr. Jetter's promotion. Mr. Joines has been with the company for seven years.

Announces Staff Change

MIDLAND, MICH.—Hillard L. Smith has been named assistant to the manager of agricultural chemical sales for The Dow Chemical Co., W. W. Allen, sales manager, announced recently. In the new position Mr. Smith will handle administrative, personnel and sales development functions. The promotion became effective January 1, according to Mr. Allen. Mr. Smith has been with Dow since 1944. The past five years he has acted as manager of the sales planning section of Dow's Agricultural Chemicals Sales Department. He will continue sales development responsibilities in his new job.

Hillard L. Smith

●

Calchem, Ortho Shifts

RICHMOND, CAL.—Personnel advancements and new appointments by California Chemical Co. and its Ortho division (formerly California Spray-Chemical Corp.) have been announced by the firm.

The appointment of H. E. Brandt as manager of organization and cost control of California Chemical Co. was announced by Fred Powell, president of the company. Mr. Brandt was formerly with Calspray in a similar capacity.

Appointments of W. W. Layne as comptroller and C. M. Sturfield as manager of credit of California Chemical Co. were announced by D. B. Barlow, secretary and treasurer of the company.

A number of recent appointments and personnel shifts have also been announced by the Ortho Division. These were as follows:

John R. Bigger, Belvidere, Ill., has become a sales representative for Ortho in that area. He was formerly with the Boone Soil Service Co.

Charles Standley was appointed an agricultural sales representative and fieldman in Salt Lake City, Utah. He was formerly with the Simplot Co. at Moses Lake, Wash.

J. P. Goode, Salinas, Cal., has been appointed a field research entomologist for Ortho. Mr. Goode was formerly with the New Mexico State Department of Agriculture.

Robert C. Hike has been made sales supervisor for Northern California by Ortho Division. He will coordinate sales activities in his area.

Richard H. Meridith, Overland Park, Kansas, has been appointed branch manager for Ortho. He has been with the company for four years.

New Plant Manager

MERIDIAN, MISS.—Harry Barnes has been named plant manager of the Dixie Fertilizer Co. in Meridian, being put in operation in January.

Mr. Barnes entered the fertilizer industry in 1947 at Eagle Grove, Iowa, where he was plant superintendent for the Consumer Co-op of Kansas City. He later tained personnel at the second plant in St. Joseph, Mo., and was transferred to a third Consumers plant at Muskogee, Okla., as superintendent in 1949. He was later associated with the Crawford Chemical Co. at Bartlesville, Okla., and in 1956 became production manager with Southwest Fertilizer Chemical Co. at El Paso, Texas.

●

Francis Leeper

Alex Vann

Loyd Lent

Linden A. Webb

Mid-South Appointments

MEMPHIS, TENN.—Several personnel changes and territory shifts for Mid-South Chemical Corp., Memphis have been announced by David H. Bradford, Jr., vice president and sales manager of the firm.

Francis Leeper, who has been working in the Midwest division, has become manager of the Southern division with headquarters at New Iberia, La.

Alex Vann, who has been district salesman at Vincennes, Ind., has been assigned new duties as assistant manager of the Midwest division with offices at North Pekin, Ill.

Loyd Lent has been assigned new duties as district manager in charge of the Mt. Vernon, Ind., terminal area and also will have the responsibilities under L. A. Webb and Alex Vann for operation of the Mt. Vernon terminal.

L. A. Webb, who has been manager of the Midwest division, will retain that position, and also has been assigned to head a new department being formed within the company—training and special activities department.

F. L. (Bud) Mounce, who has been in the company's auditing department, has joined the sales department as a district manager and will live at Pesotum, Ill.

Joe Story, who has been in charge of several retail outlets in the Midwest division, has been reassigned to new territory as district manager in Southern Illinois and Kentucky.

Lonnie H. Floyd has been assigned as a district manager in the Lower Rio Grande Valley of Texas.

SunOlin Appoints

CLAYMONT, DEL. — Norton H. Walton has been appointed assistant operating superintendent in charge of the SunOlin Chemical Co. urea plant at Claymont, Del., it was announced Jan. 6.

Before joining SunOlin, Mr. Walton was employed by Atlantic Refin-

(Turn to PERSONNEL, page 22)

. . . is now operating at **Beaumont, Texas**

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- **Storage capacity totals 31,000 tons for molten sulphur and 1,000,000 tons for solid sulphur. Loading capacity for molten sulphur ranges up to 3,000 tons/hour, tanker and barge simultaneously; for solid sulphur the loading capacity is 1,200 tons/hour into ship or barge.**

This development at Beaumont is but another step in the broadening delivery service program now being carried out by TGS. Regional distribution centers, handling molten sulphur, are already in operation at Cincinnati, St. Louis and Tampa. Coinciding with the full operation of our main terminal at Beaumont will be the opening early in 1961 of two coastal terminals at Carteret, New Jersey, (26,000 tons molten sulphur storage) and Norfolk, Virginia (20,000 tons). Other terminals are in the planning stage.

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9,500 Employees Involved . . .

Monsanto, Unions Complete Negotiations For Pension and Group Insurance Benefits

ST. LOUIS—Completion of negotiations on a multi-plant program of increased pension and group insurance benefits for hourly employees was announced recently by Monsanto Chemical Co., the International Chemical Workers Union, the Oil, Chemical and Atomic Workers, the International Union of Operating Engineers, the International Union of Electrical Workers and the International Assn. of Machinists.

Agreements on pensions and group insurance provisions were signed, completing negotiations less than three months after they were initiated on Sept. 29, 1960.

More than 9,500 hourly employees at 15 Monsanto plants are covered by the agreement. The increased pension and group insurance benefits became effective as of Dec. 1, 1960, and Jan. 1, 1961, respectively and will continue for a five-year period until Dec. 31, 1965.

The new agreements substantially liberalize Monsanto's pension and group insurance programs for hourly employees. The maximum monthly pension has been increased from $2.25 to $2.85 a month for each year of service plus social security benefits. Under the new plan, most employees with 25 years of service will receive a monthly retirement income of $186.75 including social security. Additional benefits accrue to a majority of employees through a contributory pension plan which remains substantially unchanged.

Early retirement and total and permanent disability pension provisions also are liberalized in the new agreement. Hourly employees who reach the age of 45 and have ten years of service may receive a pension at retirement age with proportionally reduced benefits. The minimum pension for eligible workers totally and permanently disabled is increased 37% over the previous plan.

Group hospitalization and insurance provisions have been increased to employees under the agreement. Liberalized allowances for hospitalization and for medical care at home are included in the plan. It also provides for increased protection of employees and their families against the rising costs of medical care.

EVERY MAN HIS OWN SAFETY SUPERVISOR

A three-step system for safety in both pesticide and fertilizer manufacturing plants has been suggested by Vern C. Page, Sohio Chemical Co., Lima, Ohio. What he terms are "Three Keys to Safety" are as follows:

1. Take time to pause and study the job at hand.

2. Recognize the hazards associated with it.

3. Take action that will avoid or overcome these hazards.

"The idea of these three keys makes each man in the plant a supervisor of his own actions," Mr. Page observes. "He will learn to recognize the capabilities, limitations and weaknesses of equipment he is handling. He will become aware of substandard conditions, potential hazards, and will take the right action. Greatest of all, he will eliminate largely the need for constant supervision—a thing that is virtually impossible under normal working conditions."

CSC to Provide Own Natural Gas Source

NEW YORK — Commercial Solvents Corp. reports that it is now meeting a substantial portion of its raw material requirements for natural gas from its own gas wells. The company also announced a major expansion in 1961 of the drilling and extracting operations of its natural gas subsidiary, the Louisiana Gas Production Co.

According to Maynard C. Wheeler, president of Commercial Solvents, the expanded operations will provide CSC with a reliable source of natural gas at the lowest possible cost. When completed, the company will have an investment of approximately $4,000,000 in this phase of its program to become self-reliant in the production of chemicals from natural gas.

The expansion includes the location and drilling of new wells, the construction of gas gathering facilities and the laying of an additional pipeline from the Monroe gas field in northern Louisiana to CSC's Sterlington, La., plant, where anhydrous ammonia, methanol and a wide range of derivatives for industrial and agriculture use are made.

Hawaiian Subsidiary For Best Fertilizers

HONOLULU—The Best Fertilizers Co., Lathrop, Cal., has opened a new subsidiary, The Best Chemical and Fertilizers Company, Ltd., in Hawaii, with headquarters at 646 Pohukaina Street here.

John Clark

Lowell W. Berry, president of the new Hawaiian firm, announced that John Clark had been appointed vice president and general manager. Mr. Clark was formerly manager of the chemical division of Alexander and Baldwin, Ltd. He is a native of Hawaii.

Best Fertilizers manufactures anhydrous ammonia, sulfuric acid, phosphoric acid, ammonium sulfate, and ammonium phosphate pelleted fertilizers. Mr. Berry said the Hawaiian subsidiary will serve as distributor for a number of the major producers of agricultural chemicals, as well as manufacturing and distributing fertilizers throughout the Islands. Negotiations have begun for sites for plant and warehouse facilities.

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Volume 6 | For Manufacturers of Mixed Fertilizers | Number 1

ANNUAL SURVEY REVEALS OPTIMISTIC OUTLOOK FOR 1961 FERTILIZER SALES

Nitrogen Division's annual survey to determine the market potential for fertilizer reveals many promising signs. Comments by leading industry representatives across the country indicate there is widespread optimism about further growth in sales of mixed goods during 1961.

The outlook has even improved a little over forecasts made last spring for continued fertilizer sales increases, according to Nitrogen Division.

Major part of the growth will probably be in the North Central region, particularly the West North Central, the survey shows. Some progress is expected in the Middle Atlantic, Southern and Western regions. The forecasters think New England will hold steady. No region is expected to decline.

However, realization of a good fertilizer year depends, as always, on weather conditions being normal or better.

The trend toward high-analysis fertilizers will continue, industry leaders believe. High-nitrogen grades are popular, and indications are their sales will grow throughout 1961.

Corn acreage is expected to be reduced slightly—probably by less than two million acres. Some corn land in the Midwest will be diverted to soybeans, but this will represent only a small part of the increase in soybean acreage. The trend to less corn in the Southeast may continue. But in spite of these conditions, the Nitrogen Division survey shows more corn land may be fertilized at higher rates than ever before, weather permitting.

Cotton acreage, it is indicated, will be up during the coming season. There is some anticipation of a rise in the support price. Bulk of the million-acre increase in 1961 cotton allotments has been given to the area east of Texas. However, these farmers traditionally underplant and abandon much more acreage than growers do in the West.

Small grain acreage may be up a little. Wheat will be about the same, but oats will probably increase due to higher prices relative to other feed grains.

Look for some substantial growth in sugar beet acreage, because of the Cuban sugar situation. There will not be an acreage explosion; the U. S. lacks sugar beet processing facilities.

Acreages of other major crops are expected to be about the same as they were last year.

Larger harvests that offset lower prices are why farm income went up slightly in 1960. The income and general cost situation is favorable toward more fertilizer sales. Biggest rise in farm costs in 1960 was interest on mortgage indebtedness, which was up 10%. Taxes were up 8%. Fertilizer costs increased 1%. This should encourage farmers to try to produce more yields on existing land.

Southeastern Comments

Comments from the Southeast point to many reasons for a promising fertilizer year ahead. In the opinion of one industry leader, optimism can be based on the fact that most farmers agree they had a good year in 1960.

Another Southeastern representative reports: "Dealers are collecting old fertilizer accounts three and four years on the books, due to the rise in farm income." He estimates an increase of 8 to 10% in the sale of mixed fertilizers this spring.

(continued on following page)

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Others are more modest in their predictions, but are generally encouraging. "Prices for tobacco, corn and small grains all look good," a North Carolina fertilizer man declares, "and this is a factor pointing toward a possible overall rise of 5% in the sale of mixed fertilizers during the first six months of 1961.

A sampling of opinion in Virginia indicates mixed fertilizer sales will be up 4%. State farm income is expected to increase 5%. Prices of farm commodities are good. Industry people say fertilizer raw material is readily available, and they expect the manufacturing and distribution picture to be favorable. Colleges are recommending higher-analysis fertilizer which will have a long range effect in building up the industry. The 12,600 additional acres of cotton allotted to Virginia should represent additional fertilizer sales.

A Greenville, North Carolina, representative states that the bright outlook for fertilizer sales is based largely on what tobacco did in 1960. An excellent crop sold at high prices. Although corn was damaged some by storms, cash income from this crop also was above average. Peanuts, beans and other crops were fair.

An industry spokesman from Raleigh says: "Sales for the first half of the year should be at least the same tonnage for North Carolina as in 1960—about a million tons. Fall fertilizer sales were good. Excellent weather conditions permitted top-dressing of pastures, and there was plenty of small grain and grass seeding. I look for tobacco and cotton acreage to stay the same. There may be a switch from corn to soybeans on some farms and this could result in less fertilizer use. There probably will be more granular and semi-granular fertilizer grades manufactured this year."

One other North Carolina representative estimates a 5% sales increase. He thinks tobacco and corn yields last year will contribute to the farmer's welfare, but says the situation could have been better if Hurricane Donna had not damaged some crops.

Soil Fertility Program Helps

A South Carolinian reports: "Fall fertilizer usage was up, and we believe spring will see the same. The Clemson soil fertility program of soil tests and recommendations is expanding. Farmers in general have a better outlook than last year, and this will lead to increased sales for us, particularly on grain, cotton and corn."

A second spokesman from South Carolina predicts that farmers will be able to finance a good farm program this year. "They will be in the mood to increase yields through the use of more plant food," he points out.

Another report from that area forecasts an increase in spring sales of approximately 2 to 5%. The Clemson soil fertility program is again mentioned as a contributing factor.

Large numbers of new mechanical cotton pickers were purchased in South Carolina during 1960. This may contribute toward a willingness to plant a greater portion of the cotton allotment this year. The fertilizer man who makes this observation also believes the sale of mixed goods could increase as much as 10%. He cites the good yield and price of tobacco as an added supporting factor.

Still another South Carolina fertilizer man predicts total sales of 500,000 tons of mixed goods—nearly the same as the first six months of last year.

Reports from Georgia about prospects for fertilizer sales are on the encouraging side. One representative predicts a 5% increase, and says he would go higher except that some sections suffered from drought.

Some Georgia fertilizer people think tonnage will be the same this spring. Manufacturers expect no hardship from raw material availability, but they predict little manufacturing expansion.

Here is an interesting statement made during the Georgia survey: "Farmers who are surviving today must be good managers. They have learned the value of fertilizer and now represent a better market."

A comment from Florida mentions Hurricane Donna caused an erratic movement of mixed goods last fall. Nearly everyone around the state expects a better spring fertilizer season.

Up in the Mid-South, a Kentucky-Tennessee manufacturer thinks there will be a 5 to 7% sales increase. "Farmers are getting better educated on the value of higher fertilization on cash crops," he asserts. "Less mixed fertilizer may be used on pastures due to poor cattle prices, but there will be an increase in the movement of mixed goods due to new cotton acres being planted."

Eastern Predictions

Fertilizer demand should be about the same as last year in New England. The dairy farmer is a good customer. Higher nitrogen grades are gaining better acceptance.

Western Pennsylvania is looking for a smooth shipping season, which it has not enjoyed for several years. Manufacturers expect a rise in tonnages, and will use better production methods. Farm prices are good, and more plant food is being suggested through soil testing.

"Results of the past season are showing what can be done through proper fertilization," an industry representative explains, "and the general economy of the area seems to be in fine shape for the coming year."

One disturbing factor in Pennsylvania is the rapid decline of small grain acreage throughout the state. Poor prices and yields have contributed to this situation.

Delaware and Maryland Eastern Shore manufacturers look for an increase in fertilizer sales, provided weather is better than it was last spring. College recommendations have been revised with emphasis on increased use of higher-analysis fertilizers. A well-received soil fertility program was recently launched in three Southern Shore counties.

"Pasture fertilization is beginning to get a foothold in this area," according to one spokesman, "and should contribute to increased consumption."

Midwest Looks Promising

Demand for fertilizers have been flourishing in the Midwest for the past several years. There is reason to expect this market will continue to expand.

"More farmers realize the necessity of using fertilizer," declares a leading manufacturer. "They see it will make the greatest return in the shortest period of time, compared to other products they purchase for use on the farm. More bankers are realizing this, too, and they are willing to lend money for fertilizer applications."

Reports from Kansas, Nebraska, North Dakota and Minnesota seem to rank

among the most optimistic in the Midwest. Indiana and Ohio predict a more modest sales rise in the offing, with the possibility of greater increases, depending upon preplant weather.

Reasons for the overall favorable outlook in the Midwest are: (1) Higher farm income than last year, (2) better fertilizer distribution through larger numbers of small mixing plants and warehouses, (3) and greater use of bulk spreaders assigned to dealers.

Less wheat acreage last fall because of late corn harvest may mean more corn this year, a manufacturer points out. He predicts a 3 to 5% sales increase for mixed goods in Ohio and Indiana. Farmer education and acceptance of fertilizer is at an all-time high.

Additional commentary from Indianapolis substantiates this estimate, and cites the same percentage figures. Another Indiana opinion sets the figure at 4%. Factors that will favorably influence fertilizer sales, says the representative making this report, are livestock prices, continued good results with fertilizer, favorable costs for mixed goods and more local distributors who are giving better service.

An Ohio representative says the trend is just starting to plow-down more fertilizer there. "In the past, we have been selling about 80% starter fertilizer. The switch to plow-down should cause mixed goods to go up about 5 to 10% this year," he asserts.

Warehousing Improved

"Dry manufacturers are putting in more warehouses at a rapid rate," he continues. "This should aid distributors during the rush season. All manufacturers are pushing soil testing which will promote higher and heavier rates of fertilization."

A Michigan fertilizer man explains that sales should be slightly higher because: (1) Farmers harvested the largest bean crop on record, (2) beet production is down, but sugar content is up and growers enjoyed income that was as high as a year ago. He states that the economy of the area is tied closely to these two crops.

From Minnesota comes the report that this will be a better spring for fertilizer than last year, which was cold and wet. Better weather conditions should enable more corn planting at earlier dates, causing farmers to use broadcast and starter fertilizers. Pasture will probably get an extra helping of plant food this year, partly due to an increase in farm income, the report says.

Both Minnesota and North Dakota had good fall harvest weather, and this created interest among farmers about fertilizer. Their mood was favorable, and they could see results of their fertilizer applications.

North Dakota agricultural college recommendations for use of nitrogen and mixed grades have been upped. The new bulk spreaders for applying blended goods are catching on fast in this area.

Iowa and Illinois expect sales equal to last year. They may increase slightly, most manufacturers think, because crop response was favorable to fertilizer last year. Southwest Iowa reports a rise in fall movement of mixed goods. Sub-soil moisture is above average.

Nebraska claims an excellent outlook for 1961, due to good crops and fertilizer results in 1960. One industry representative says: "Fertilizer promotion has helped here. Higher analysis will be the rule, and we expect more potash will be applied."

Last fall, Kansas and Nebraska farmers harvested one of the most bountiful corn and sorghum crops in their entire history. Their good results with fertilizers will give a boost to sales this year. The industry also may see more use of fertilizer-insecticide combinations in corn rootworm areas.

Missouri fertilizer people think sales will be steady in comparison to last year.

Southern Market Analyzed

A Mississippi representative believes there will be a 5 to 10% increase in the sale of mixed fertilizers this spring. "The big reason," he explains, "is more competitive selling to farmers. This makes manufacturers work harder and actually creates more sales."

He goes on to point out that the South is getting more bulk distribution and larger applications of fertilizers are being recommended by the state colleges. "Plenty of mixed goods are available at reasonable prices, and the general outlook is good," he concludes.

Alabama farm income was high last year. Fertilizer sales this spring are expected to equal or surpass previous years.

A fertilizer man who travels Oklahoma and Texas thinks manufacturers can expect more business because of increased cotton acreage allotments. There will also be more sugar cane and sugar beet production. He says bulk spreading of fertilizer is having favorable effects in this area.

Other sample opinions from Texas and New Mexico indicate fertilizer sales might rise as much as 10 to 15%. "Soil sampling is up," according to one spokesman, "due to a good soil fertility program." He cites the bumper wheat, cotton, and grain sorghum crops last year as favorable factors. "Better college recommendations also are playing a vital role," he declares.

Western Forecasts

Manufacturers in the Rocky Mountain area anticipate a 15% increase in the sale of mixed fertilizers. The trend toward higher-analysis fertilizer is definite.

A Western representative gives the reasons behind this trend:

"For one thing," he says, "there is a lower unit cost for high-analysis mixtures. Also, small blending plants are serving the farmers in local areas with the exact plant food nutrients required. All fertilizer can be applied in one application with these mixtures.

"There are a couple of other factors that will be important next year," he went on. "There will be a 10% increase in the sugar beet acreage allotment. Higher prices and yields on all crops will encourage farmers to use more fertilizer in 1961."

A Good Spring Ahead

The fertilizer industry as a whole seems healthy and happy as it contemplates the spring season. Voices of pessimism are occasionally heard, but they are rather scattered. The cross-country survey paints a pretty clear picture of optimism for mixed fertilizer sales.

Now is the time for manufacturers to prepare for the big spring rush. Make sure you are ready to handle large volume orders when the demand for fertilizer hits! Build up your inventory, check your plant equipment and get ready to make the most of your sales opportunities.

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	CHEMICAL COMPOSITION %						PHYSICAL PROPERTIES		
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NITRANA®									
2	41.0	22.2	65.0	—	12.8	10.8	1.137	10	21
2M	44.0	23.8	69.8	—	6.4	10.8	1.147	18	15
3	41.0	26.3	55.5	—	18.2	12.8	1.079	17	-25
3M	44.0	28.0	60.0	—	12.0	12.7	1.083	25	-36
3MC	47.0	29.7	64.5	—	5.8	12.6	1.089	34	-30
4	37.0	16.6	66.8	—	16.6	8.9	1.184	1	56
4M	41.0	19.0	72.5	—	8.5	9.2	1.194	7	61
6	49.0	34.0	60.0	—	6.0	13.9	1.050	48	-52
7	45.0	25.3	69.2	—	5.5	11.2	1.134	22	1
URANA®									
6C	43.0	20.0	68.0	6.0	6.0	9.3	1.180	12	39
6M	44.0	22.0	66.0	6.0	6.0	10.0	1.158	17	14
10	44.4	24.5	56.0	10.0	9.5	11.0	1.114	22	-15
11	41.0	19.0	58.0	11.0	12.0	9.2	1.162	10	7
12	44.4	26.0	50.0	12.0	12.0	11.7	1.087	25	- 7
13	49.0	33.0	45.1	13.0	8.9	13.5	1.033	51	-17
DURANA®									
DURANA is a trade-mark of Allied Chemical Corporation.	37.0	13.3	53.4	15.9	9.4	7.2	1.235	0	36
U-A-S®									
A	45.4	36.8	—	32.5	30.7	16.2	0.932	57	16
B	45.3	30.6	—	43.1	26.3	13.5	0.978	48	46
Anhydrous Ammonia	82.2	99.9	—	—	—	24.3	0.618	211	-108

*DURANA contains 8% formaldehyde.

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Memphis 9, Tenn., 1929-B South 3rd St. Whitehall 8-2692
Indianapolis 20, Ind., 6060 College Ave. Clifford 5-5443
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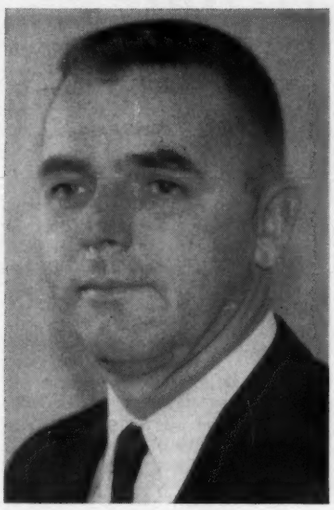
Production MAN of the MONTH



Richard E. Leigh

Pesticide Production A Daily Challenge to This Arizona Manager

THE COMPLICATIONS of manufacturing agricultural pesticides and other chemical products are taken in stride every day by the production man slated for special recognition in this issue. He is Richard E. Leigh, production manager of the Toltec plant of Arizona Fertilizer and Chemical Co. This facility manufactures agricultural chemicals, both dust bases and emulsion concentrates. These processes include grindings and impregnations. Under his supervision is a plant with a capacity output of four tons of agricultural dust base materials an hour, or 2,000 gallons of emulsion concentrates an hour.

Also under his responsibility is the firm's cotton seed treating plant and the farm chemical defoliation program in Arizona's largest cotton growing county. Mr. Leigh has had an exciting career aside from his work in the plant. He attended St. Martins College, Olympia, Washington, until war interrupted his studies in biological science. In 1942, he entered the Army Air Corps as a pilot and after a combat tour in Burma, he became director of operations for Staff Squadron Southeast Asia Command, Colombo, Ceylon. After returning from overseas, he was commanding officer of the Air Transport Command, Hill Air Force Base, Ogden, Utah. While there, he attended classes in chemistry at Weber College.

Richard was honorably discharged from the army in 1948 and was with an oil firm until 1951. At that time, he sought a dry climate for family health reasons and became associated with his present employer, Arizona Fertilizer & Chemical Co., in Phoenix.

As part of his new assignment, he helped in the 1953 construction of the Toltec, Ariz., manufacturing facility, the only one of its type in the Southwest, and was later appointed as its production manager.

Despite the demands of his responsible job as production manager in a firm which has been serving Arizona agriculture for over three decades, Dick Leigh still finds some time for his favorite hobbies of hunting and fishing.

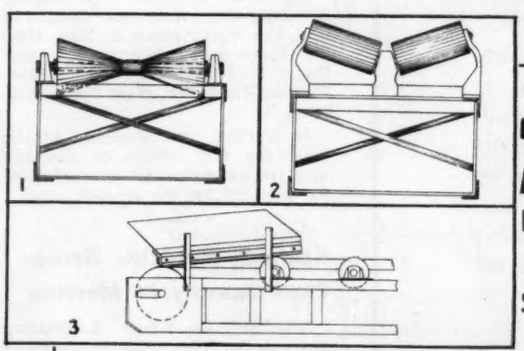
Dick's responsibilities don't exactly end when he comes home at night. Upon arrival here, after a hard day's work, he is usually greeting by his wife and their five children . . a situation which should make any man feel "needed," both at home and at work.

Southern Nitrogen Co. Estimates Earnings for 1960

SAVANNAH, GA. — Southern Nitrogen Co. expects to report 1960 earnings of approximately $1 per share on its common stock, compared with earnings of 67¢ a share in 1959, John R. Riley, president, told the New York Society of Security Analysts on Dec. 27.

Southern Nitrogen, with headquarters in Savannah, manufactures a full range of nitrogen products for agriculture and industry. The company began operations in 1957.

ESA GOVERNING BOARD—Officers and board members of the Entomological Society of America were named at the Society's recent meeting at Atlantic City, N.J. In the photo above, they are (seated, left to right): Neely Turner, Eastern Branch representative; C. M. Meadows, Southwestern Branch; Robert Glen, president-elect, 1961; R. H. Nelson, executive secretary; F. S. Arant, president, 1961; M. P. Jones, president, 1960; Ralph Sherman, Section E, and C. B. Philip, Pacific Branch. Standing: G. J. Haeussler, vice chairman, Section C; Roy Hansberry, Section F; K. L. Knight, vice chairman, Section D; R. H. Davidson, North-Central Branch; E. G. Linsley, Section A, retiring; Raimon L. Beard, Section B; L. D. Newsom, Southeastern Branch, and J. E. Bussart, North Central Branch, retiring. The new president for 1961, Dr. F. S. Arant, is head of the department of zoology and biology, Auburn University, Auburn, Ala. Dr. Robert Glen, president-elect for 1961, who will become president in 1962, is director general of the Research Branch, Canadian Department of Agriculture, Ottawa, Ontario.



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Acquires Consulting Firm

NEW YORK — Foster D. Snell, Inc., New York, chemical consultant, has acquired Calkin & Bayley, Inc., industrial consultant, it was announced by Dr. Foster D. Snell, president and chairman of the board. The acquisition become effective Jan. 1, 1961. Calkin & Bayley will be operated as a wholly-owned subsidiary of the Snell firm, with George T. Bayley, C & B's former president and board chairman, acting as vice president in charge of the Calkin & Bayley Division of Foster D. Snell, Inc. The C & B Division will continue to operate from its present offices in the Chemists' Club, 50 East 41st Street, New York City.

At the same time, Dr. Snell announced his company's decision to close its Davis & Bennett Division at Worcester, Mass., "as soon as work in progress can be completed."

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Actual Production Under Way at New Bunker Hill Plant

KELLOGG, IDAHO — Production at The Bunker Hill Co.'s phosphoric acid plant, completed last June, was to start in January, it was announced recently by A. Y. Bethune, manager of metallurgy for the northern Idaho mining firm.

Start of production at the $2,000,000 plant has been delayed by a seven month strike of mine-mill workers which was settled in mid-December.

The initial capacity of the plant will be 130 tons of phosphoric acid per day, but the firm says the plant was constructed to allow easy expansion if the demand for the product increases. The plant will operate three shifts, seven days a week.

According to earlier announcements, Collier Carbon & Chemical Corp., Los Angeles, will take much of the production of the new plant to use at northern Idaho facilities it intends to build for the manufacture of concentrated green acid, anhydrous liquid phosphate. Bunker Hill has contracts with other fertilizer manufacturers also. Gypsum will be a by-product of the operation.

Six years ago Bunker Hill began production of sulfuric acid as a by-product of its electrolytic zinc plant. Production of sulfuric acid has reached 100,000 tons a year.

Bunker Hill has also indicated it has plans for its own fertilizer production plant sometime in the future as part of a long range diversification program for the Coeur d'Alene mining area.

Fire Destroys North Carolina Fertilizer Plant

DUNN, N.C.—Nathan Johnson, Jr., president, reports that loss from a spectacular fire which destroyed the Johnson Cotton Co. fertilizer plant on Dec. 30 "is not as great as first feared."

Mr. Johnson estimates the loss to be "in the neighborhood of $250,000 to $300,000." He added that the loss was "not fully covered" by insurance.

Some fire officials earlier had estimated the loss would run as high as $500,000.

The blaze was discovered about 5:45 p.m., and by 8 p.m. the plant and adjacent warehouses, which covered nearly two blocks, were destroyed. At least two railroad boxcars went up in flames. There also was some water damage to the company's adjacent cotton gin.

Mr. Johnson said the fire, punctuated occasionally by explosions, sent flames high in the sky and raised a pall of smoke visible for miles. Police evacuated houses in a three-block area for fear the fire would spread.

However, Dunn firemen with assistance from the Benson and Erwin fire departments succeeded in keeping it from spreading to nearby facilities which included a bulk oil plant.

PESTICIDE FIRE

HOMESTEAD, FLA. — Drums of insecticide were destroyed in a fire recently at the Tucci Brothers Packing Co. warehouse here. Pat Tucci, president of the company, said he had just received a winter shipment of insecticide sprays. He estimated his loss at between $15,000 and $20,000.

Edward Block, 58, Olin Mathieson Officer, Dies

BALTIMORE, MD. — Edward Block, 58, senior vice president and general manager of the chemical division of Olin Mathieson Chemical Corp., died Jan. 4 in a hospital here.

Edward Block

Mr. Block had been an officer of Olin Mathieson since 1955 when the Blockson Chemical Co. of which he was secretary-treasurer, became affiliated with Olin Mathieson. He was made senior vice president of OM in 1958.

The deceased was a 1923 graduate of the University of Chicago with a bachelor of science degree. During the ten years following graduation, he was associated with a number of chemical firms, and in 1933 was made secretary-treasurer of Blockson. He remained in this post until the company joined OM.

The Block family home is in Chicago, Ill.

Pennsylvania Plans Fertilizer Conference

UNIVERSITY PARK, PA.—Physical and chemical properties of Pennsylvania soils, and management practices that enable them to produce efficiently, top a dozen different subjects listed for the annual Lime and Fertilizer Conference at the Pennsylvania State University, Feb. 8-10.

Albert S. Hunter, soil technologist and chairman of the program committee, has announced five guest speakers, including Dr. W. H. Garman, Washington, D.C., representing the National Plant Food Institute.

Others are T. R. Cox and Francis A. Raymaley, American Cyanamid Co., New York; Merle R. Teel, Purdue University, Lafayette, Ind., and Roger C. Smith, Eastern States Farmers Exchange, West Springfield, Mass.

In addition, soil scientists at the university will report on research and on extension recommendations for farmers for the ensuing year.

Kentucky Pesticide Group Plans January 24 Meeting

LEXINGTON, KY. — Registering and labeling pesticides in Kentucky will be the first topic for consideration at the Jan. 24 pesticide conference at the Kentucky Agricultural Experiment Station, Lexington. William J. Huffman, Feed and Fertilizer Division, University of Kentucky, will talk on this subject.

Other subjects slated for discussion include reports on pesticide research, disease control on a number of crops, and pesticide recommendations for 1961.

The meeting will be held in room 232 at the Experiment Station. Sessions begin at 8:45 a.m., eastern standard time.

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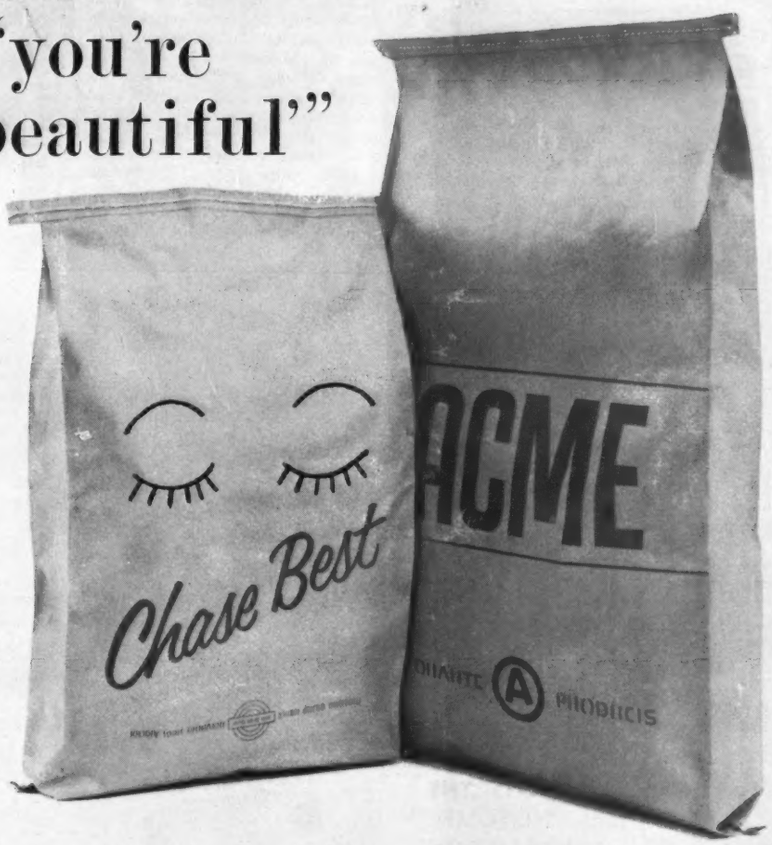

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YUGOSLAV SCIENTISTS—Engineers and plant managers touring the U.S. to study American production methods heard about operations research techniques used at International Minerals & Chemical Corp. when they stopped at headquarters office of IMC in Skokie, Ill., as part of recent tour sponsored by International Cooperation Administration. Man with microphone is a simultaneous translator.

Velsicol Forms Subsidiary For Customers in Mexico

NASSAU, BAHAMAS—Velsicol International Corp., C. A., has announced the formation of a subsidiary in Mexico. Name of the new Mexican company is Velsicol Internacional de Mexico, S. A. de C. V.

Richard Desouches has been appointed general manager, and Carlos Castro manager of the Mexico City office.

The new company will warehouse and sell agricultural insecticides—heptachlor, endrin and chlordane as well as resins for industrial use. All of these products are manufactured in the U.S. by Velsicol Chemical Corp., Chicago.

The Mexican company was organized to provide facilities for improved service to Velsicol's customers in that country. Technical assistance will be available to formulators of insecticides and firms using Velsicol resins.

The new company's address is: Velsicol Internacional de Mexico, S.A. de C.V., Edificio Morelos-Reforma, Morelos Num. 110, Despacho Num. 209, Mexico 1, D.F.

Gulf Coast Petrochemical Progress to Be Studied

NEW ORLEANS—Chemical engineering advances on the Gulf Coast and the Southwest will be the major theme of the 44th national meeting of the American Institute of Chemical Engineers at the Hotel Roosevelt here Feb. 26-March 1, 1961.

It will be held in conjunction with the first Petrochemical and Refining Exposition, sponsored by A.I. Ch.E., in the nearby municipal auditorium. Suppliers of equipment for the refining and petrochemical company industry will take part.

MCA Head Predicts Sales in 1961 May Be More Than the $28 Billion Record of 1960

WASHINGTON — General John E. Hull, president of the Manufacturing Chemists' Assn., has reported that chemical industry sales for 1960 are expected to hit $28 billion, or about 9% above the 1959 sales record of $25.7 billion.

"In addition," he says, "an average of estimates made by industry leaders earlier, indicates that 1961 holds promise of total sales exceeding the total for 1960.

"In looking over the decade of the 1950's, it appears that if the next 10 years of chemical industry development should be anything like the last 10, we are in for continued growth. Between 1950 and the end of the third quarter of 1960 chemical industry production on an index basis increased from 60.5 to 122, and investment in new plant and equipment amounted to $13.5 billion. This increased industry assets to more than $24 billion by 1960. In addition, 1960 chemical industry sales of $28 billion represent a 70.4% gain over 1950.

"Perhaps, the industry's growth in 10 years can be most effectively demonstrated by the record of production of individual chemicals. As an example urea, with markets in fertilizer, plastics and animal feed supplements, had reached 1.4 billion pounds production by 1960. Anhydrous ammonia has more than tripled since 1950, going from a production level of 1.6 million tons to an estimated 4.9 million tons in 1960.

"Sulfuric acid production increased 40% from 12 million tons of new acid at the beginning of the decade to about 17 million tons in 1960.

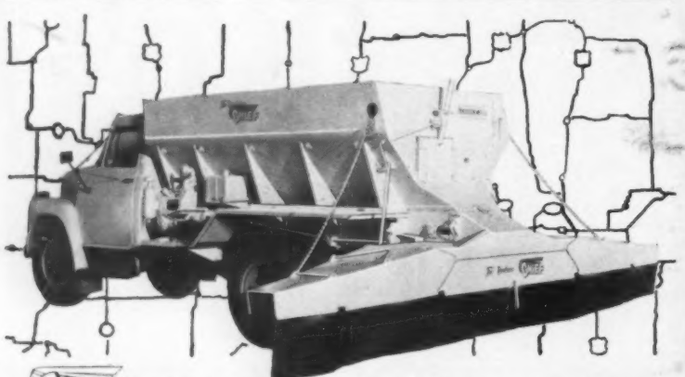
"These increased demands for chemical industry products, however, have intensified the competition within the industry. For example in 1950 there were 12 ammonia producers, by the end of 1960, there were 41. Ten years ago, two companies produced urea; now 13 do. The number of phenol producers has grown since 1950 from 10 to 18. In addition, many companies in other industries have invaded the chemical field."

Federal Chemical Officer Retires After Long Career

LOUISVILLE, KY. — The retirement of John R. Sargent has been announced by Federal Chemical Co. of Louisville. Mr. Sargent held the position of senior vice president of the fertilizer manufacturing firm.

John R. Sargent

He joined the company in 1914 as a field sales representative, and in the intervening nearly half-century, served in various executive capacities. He moved to Louisville to head the company's sales organization in 1945.



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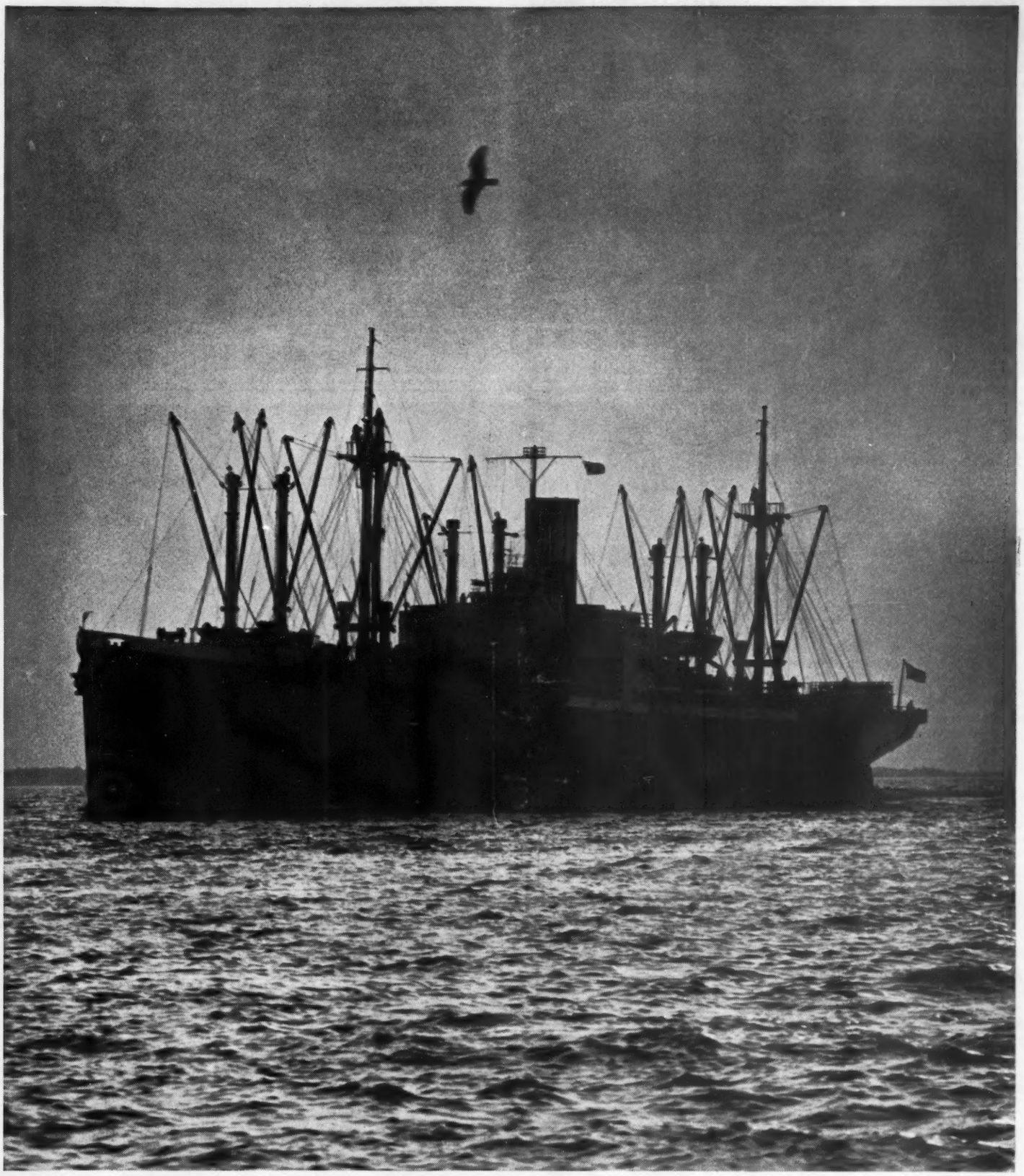
Sales and Service Coast to Coast

AWARD WINNERS—Winners in the fourth annual package competition of the National Flexible Packaging Assn. at the group's recent meeting in Boca Raton, Fla., included two plant food bags. Top photo shows polyethylene bags made by Bemis Bro. Bag Co. for Kilgore Seed Co. It is described as the first hermetically sealed drawstring polyethylene bag. The bag also won first award for chemicals packaging and achievement award for poly bags. In the lower photo is fertilizer bag designed and produced by Chase Bag Co. for Dairy Organic Corp. It received merit achievement award.



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Established 1850

PERSONNEL APPOINTMENTS

(Continued from page 11)

ing Co. for 27 years. His most recent post was supervisor in the chemicals section. He also was instrumental in organizing symposia on safety for the national meetings of the American Institute of Chemical Engineers.

Mr. Walton was graduated from the University of Pennsylvania in 1932 with a B.S. degree in chemical engineering.

He is a member of the American Institute of Chemical Engineers, American Chemical Society, Engineers Club of Philadelphia, vice president of the Philadelphia Chapter of Alpha Chi Sigma (professional chemical society), chairman of the Engineering and Technical Societies Council of Delaware Valley and president of the Philadelphia Science Council.

SunOlin is an affiliate of Sun Oil Co. and Olin Mathieson Chemical Corp.

●

Sales Engineer Named

MINNEAPOLIS, MINN.—Glenn Logan Moll has just been appointed sales engineer representing The Day Sales Co. of Minneapolis.

Glenn L. Moll

The appointment of Mr. Moll was announced by R. E. Gorgen, president of The Day Co. Mr. Moll, according to Mr. Gorgen, will serve Day customers and prospects in the Cincinnati, Ohio area. Mr. Moll's previous experience includes engineering sales for Bosland Industrial Sales and O. M. Scott and Sons. He was a dust collection project engineer for Scott's chemical division in Marysville, Ohio.

●

Eastman Changes

NEW YORK—A number of changes in organizational structure of the chemicals division of Eastman Chemical Products, Inc., subsidiary of Eastman Kodak Co., have been announced by Dr. J. E. Magoffin, vice president, and J. H. Sanders, sales manager.

Principal among these changes is the appointment of Robert H. Cannon, Jr., to the newly created post of assistant sales manager in charge of field sales. Mr. Cannon has most recently been eastern regional sales manager with headquarters in the company's distribution center at Lodi, N.J. In his new post he will be located at Kingsport, Tenn.

George J. Taylor, formerly district sales manager in charge of the division's Philadelphia office, becomes eastern regional sales manager. He will continue to make Philadelphia his headquarters.

W. C. Cooke will become district sales manager of the Philadelphia office. Mr. Cooke has been a sales coordinator in Kingsport, Tenn.

R. Clay Dubberly, formerly sales representative in charge, becomes district sales maanger of the division's Cleveland office.

●

Chipman Representative

BOUND BROOK, N.J.—Chipman Chemical Co., Bound Brook, has announced the appointment of John Van Newenhizen as sales representative in New York State. He will make his headquarters at Lyons, N.Y.

Mr. Van Newenhizen attended Long Island Agricultural & Technical College and the National Agricultural College. He was formerly with Baugh and Sons Co.

Controller Appointed

LOS ANGELES—Appointment of James I. McFaul to the position of controller of United States Borax & Chemical Corp. has been announced by R. F. Steel, vice president in charge of the administrative department.

Mr. McFaul, a graduate of UCLA with a bachelor of arts degree in economics and business, formerly was assistant controller of Title Insurance and Trust Co. of Los Angeles.

●

Assistant Controller

NORFOLK, VA.—The appointment of L. H. Britain as assistant controller for Smith-Douglass Co. has been announced. Mr. Britain will be responsible for maintaining the company's primary accounting records and preparation of financial statements, reporting to Smith-Douglass Controller and Treasurer, S. L. Lott. He will also have direct supervision of data processing, property accounting, home office accounting, and functional supervision of field accounting matters for the company.

●

Geigy Names Two

ARDSLEY, N.Y.—Geigy Agricultural Chemicals has announced the appointments of two sales representatives, one in Southern Florida and the other in Alabama.

Douglas Knapp will be field representative in Southern Florida. He was formerly a county agent in Dade County, Florida, and is a graduate of Ohio State University.

Leo K. Calhoun will represent Geigy in Alabama. He was formerly associated with California Spray-Chemical Corp. (now Ortho Division) and is a graduate from Auburn University.

●

To Southern Nitrogen

SAVANNAH, GA.—Southern Nitrogen Co. has announced the appointment of Al L'Heureux, Jr., as assistant director, promotion. Mr. L'Heureux comes to Southern Nitrogen from the Savannah Chamber of Commerce where for 3½ years he served as publicity-research director.

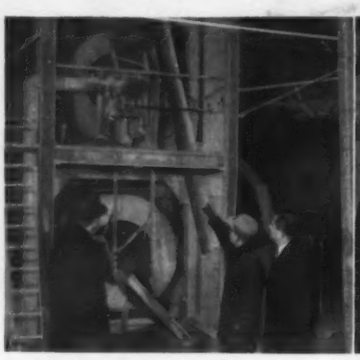
Al L'Heureux, Jr.

In his new position, Mr. L'Heureux will actively participate in the development of advertising program plans and themes,

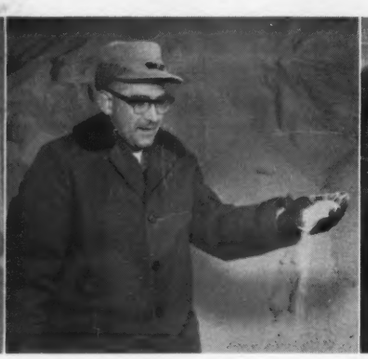
another photo report on Sul-Po-Mag® customers

How Sul-Po-Mag made a better "grade" at Northland Chemical

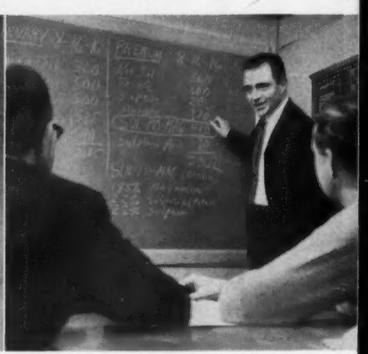
A New Northland Chemical Co. premium fertilizer gives this East Grand Forks, Minn., company a new yield and quality sales appeal. One reason: Sul-Po-Mag and the Sul-Po-Mag program. The SPM photo story on these pages shows how product, service and promotion benefit every phase of your fertilizer program. Contact your IMC district sales manager to see how this Sul-Po-Mag penetration gives you more to talk about and sell, a new profit opportunity in a fast-growing business.



Outstanding chemical properties of Sul-Po-Mag reduce production problems. Water-soluble magnesium and sulphate of potash mix and blend well, have low salt index and are neutral in reaction. Sul-Po-Mag contains 18.5% magnesia, 22% potash (sulphate form), 22% sulphur, less than 2.5% chlorine.



Sul-Po-Mag is a granular product with all of the excellent physical properties and free-flowing benefits of a granular form. It helps produce a uniform formula . . . provides both magnesium and sulphate of potash in one product, a distinct production and inventory advantage.



Formulation a part of Sul-Po-Mag service. Here IMC representative McBride helps Northland people formulate a premium fertilizer with 4 units of Sul-Po-Mag, itself a premium ingredient. And, because it is of the highest quality, the result for Northland is an improved, balanced grade.

IMC's McBride covers advertising too. Here he presents the complete Sul-Po-Mag program, which emphasizes to farmers the advantages of Sul-Po-Mag fertility. Above he shows the full potato package. Other Sul-Po-Mag programs are prepared for tobacco, sugar beets, fruit, vegetable and general promotion.

The Sul-Po-Mag program also includes full-scale merchandising aids . . . a complete packaged program imprinted with your brand name. It brings the benefits of Sul-Po-Mag product advertising directly to your area and brand, through local tie-in promotion.

budgeting, media analysis, selection and correlation. He will also work with all types of news media on the state, regional and national levels in obtaining and developing favorable company publicity and with local news media in building good community relations through all newsworthy phases of company and employee activity.

A native of Holyoke, Mass., Mr. L'Heureux began his career in the publicity and public relations field in 1951 with the U.S. Air Force where, as information specialist, he compiled news releases for military and civilian consumption, assisted in the operation of an on-base radio station and handled the promotion of opportunities available to service personnel through air force programs.

●

Joins Texas Gulf

NEW YORK—John W. Hall, Jr., has joined the sales department of Texas Gulf Sulphur Co., according to an announcement by A. Nelson Myers, vice president and manager of sales. Mr. Hall has been associated with Montrose Corp., New York City, since 1947, becoming their director of sales in 1958. He will be employed in Texas Gulf's domestic sales department.

●

St. Regis Appointment

NEW YORK—St. Regis Paper Co. announces that William S. Doolan has been appointed district sales manager of the newly-created South Atlantic District of the bag division. This district includes Georgia, South Carolina, western North Carolina, and Eastern Tennessee. It is part of the bag division's over-all southeastern regional organization under the direction of John B. Brent, regional sales manager, with headquarters in Birmingham, Ala.

Joins Thompson-Hayward

KANSAS CITY, MO. — Glenn O. Munger has joined the agricultural chemical division staff of Thompson-Hayward Chemical Co., Kansas City, Mo.

For the past two years, Mr. Munger has acted as the president of Technical Consulting & Services, Inc., located at Wichita, Kansas. Prior to that time he served as the vice president of Industrial Fumigants Co. in Kansas City.

Mr. Munger graduated from Kansas State University in 1953 with B.S. and M.S. degrees in the field of entomology.

●

Fertilizer Appointment

LAWRENCE, KANSAS — Agricultural Business Co. has announced the recent appointment of C. G. Walker, Des Moines, Iowa, as sales representative of the company's line of equipment for the fertilizer industry. Mr. Walker will call on the fertilizer trade with equipment for making both liquid and dry mixed fertilizers, as well as application equipment. Mr. Walker was formerly associated with Monsanto Chemical Co. and Allied Chemical Corp.

●

Personnel Director

ST. LOUIS, MO. — E. F. Muehlhausen will become director of personnel for Bemis Bro. Bag Co. upon the retirement of F. V. Deaderick, vice president and director of personnel, on Jan. 31, it was announced by Judson Bemis, president.

E. F. Muehlhausen

Mr. Muehlhausen, who joined Bemis as an auditor in 1943, is a staff assistant in the company's personnel department headquarters in St. Louis. He served as office manager for the Bemis bag plant in Minneapolis from 1944 to 1948, and then as office manager for the company's packaging service unit, also in Minneapolis. He was transferred to the general personnel department in the St. Louis general offices in 1953.

●

Gilman Advancement

NEW YORK—Howard Gilman, executive vice president of Gilman Paper Co., has announced the appointment of Malcolm Gray to the new post of manager of trade relations, effective immediately. Mr. Gray, formerly combined the office of purchasing agent with extra-curricular duties as company representative in trade relations. He will now devote full time to his new assignment.

●

Paul Crockett Joins Miller Publishing Co.

Paul B Crockett has joined the editorial staff of Feedstuffs, companion publication to Croplife and one of the six business publications of The Miller Publishing Co.

Paul B. Crockett

Mr. Crockett formerly was news editor of the Eagle Grove, Iowa, Eagle. He also was field editor for the Iowa Rural Electric News.

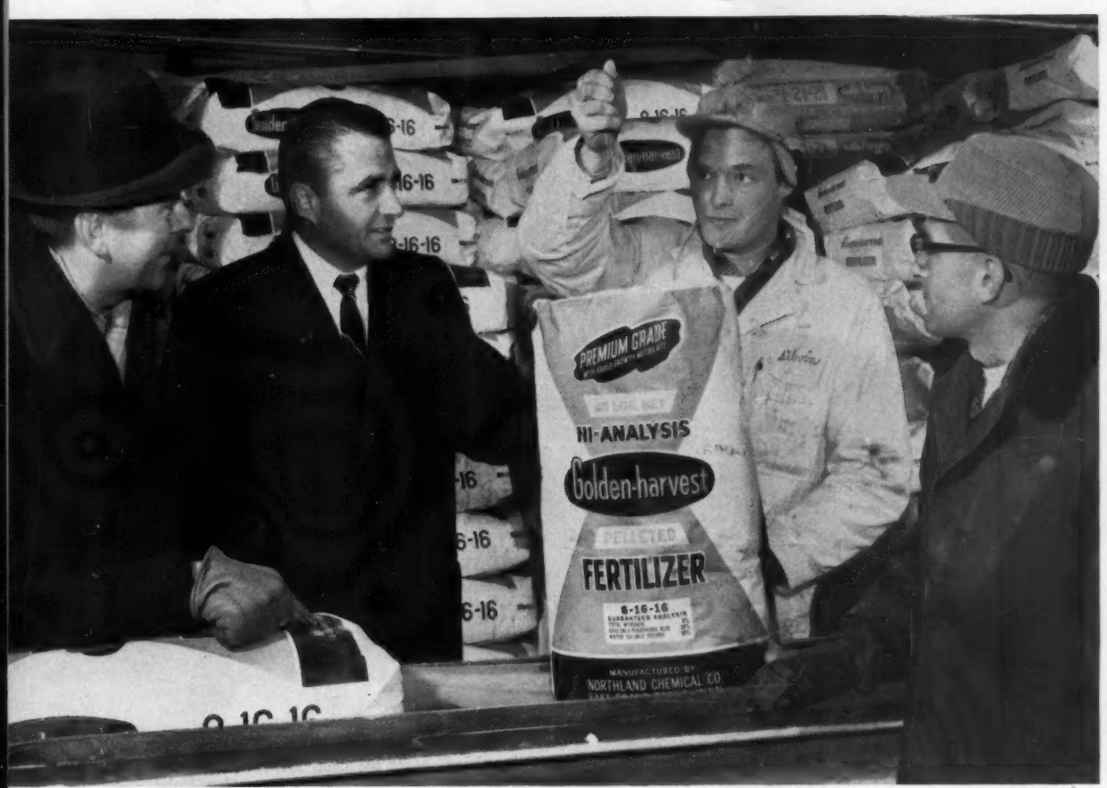
He was graduated from Iowa State University with a major in agricultural journalism and is a member of Sigma Delta Chi journalism fraternity.

California Chemical Firms Report Employment Decline

SAN FRANCISCO — Employment in chemical manufacturing and allied industries in California declined fractionally between October and November, reports the division of labor statistics of the California State Department of Industrial Relations.

The estimated number of wage and salary workers was 39,800 during the earlier month, and 39,600 during the later. The November figure nonetheless was still higher than November of 1959, when there were 39,400 employed, up by 100 from October of that year.

Earnings by production workers in the agricultural chemical division declined between October and November—from $103 on the average per week to $101.50, but still remaining above the November, 1959, average of $99.77 per week.



Northland Chemical Company's new premium-grade fertilizer contains substantial quantities of Sul-Po-Mag. It offers farmers peak benefits — higher specific gravity, yields and quality of potatoes. Here, inspecting the new formula, are W. H. Rasmussen, president; A. "Pete" McBride, IMC regional sales manager; Selvin B. Nelson, plant superintendent; J. J. Rasmussen, vice president.

Field sales service on behalf of your brand gets special attention in the Sul-Po-Mag program. Here IMC's McBride accompanies Northland management to a local farm to discuss potato grower's fertilizer plans. Object: extra sales of premium fertiiizers containing Sul-Po-Mag. It's another example of SPM program penetration.

Potato processors look for and pay more for premium quality and uniform crops. Along with Northland's Rasmussen, IMC's McBride discusses the role of Sul-Po-Mag in growing top quality... higher total solids, firmer hearts, tighter skin knit and storing ability. Their audience is Ray and Keith Driscoll, local processors.

What makes a good chipper? The kind of potato, grower Richard Hvidson (right) points out to IMC's McBride (center) and Northland's Sales Manager, Syvertsen. These have more total solids. They're shallow-eyed, tight-skinned and the biggest percent come within economical "chipping size." And they'll keep well, bring top profit when the market is right.

AGRICULTURAL CHEMICALS DIVISION

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

Administrative Center: Skokie, Illinois

IMC PRODUCTS FOR GROWTH® ®TRADEMARK

SPM-29-01

AMERICAN POTASH & CHEMICAL CORPORAT
• POTASH COMPANY OF AMERICA • SO
UNITED STATES BORAX &

✻THESE COMPANIES THROUGH THE AMERICAN POTAS
OFFER MANY DIVERSIFIED TECHNICAL AGRICULTURA

Put your finger on the area where you sell plant food, and you've put your finger on an "area of responsibility" of one or more of the "diversified services" rendered by the above companies through the American Potash Institute. Its staff is helping increase the use of plant food through helping speed the application of improved agricultural practices.

Where does the "diversified" come in? Each staff member specializes in some phase of plant food utilization or promotion. Help on soil testing, tissue testing, setting up demonstration plots, specialty crop production, informational materials, etc., might be needed . . . perhaps you can use some of these services. They are made available to you by the member companies of the American Potash Institute.

✻THROUGH HANDBOOKS AND FOLDERS

Instructive, colorful, easy to understand handbooks and folders are geared to stimulate fuller plant food usage. Through carefully chosen themes, farmers, lawn owners, others are made aware of new developments and special opportunities in the use of plant food. In the past two years alone, industry and advisory groups have requested more than 285,000 handbooks for distribution in their areas. Titles included: Fertilizer Placement, Hidden Hunger, Forest Fertilization, Better Lawns, Garden Growing, and Limiting Factors in Crop Production. During the past year and a half, over 800,000 folders have been distributed on Plant Food Your Corn Absorbs, Hidden Hunger, Fertilizer Placement and others.

✻THROUGH GRAPHICS

Slide sets, wall posters and films provide visual assistance to teachers, dealers and other information people to help them sell the advantages of plant food in factual, non-technical ways. During the past year, more than 1,200 requests were filled for slide sets on Alfalfa Production, Soybean Production, Potash Deficiency, and Fertilizer Placement. Over 10,000 multi-colored posters were sent out providing visual demonstrations of Plant Food Utilization; Corn, Cotton and Legume Starvation Symptoms, etc. Over 180,000 people viewed Institute films on such topics as Growing Alfalfa Successfully, The Plant Speaks series, and Potash Production in America.

✻THROUGH OUR MAGAZINE AND NEWS LETTERS

To speed the latest information on plant food usage to the public through agriculture and industry leaders, the Institute publishes a magazine and distributes regional News Letters. Feature articles on pertinent soil fertility findings are carried in Better Crops with Plant Food. More than 30,000 industry and advisory leaders receive this bi-monthly publication. Last year an additional 300,000 reprints of crops and soils articles were disseminated to selected influence groups. Potash News Letters treat special subjects and briefs on timely topics. More than 130,000 Potash News Letters were used by industry and advisors last year.

ON • DUVAL SULPHUR & POTASH COMPANY
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H INSTITUTE
L SERVICES

✻THROUGH ON-THE-SCENE WORK IN REGIONAL INTENSIFIED FERTILITY PROGRAMS

Whether cooperating closely with Georgia's remarkably successful Intensified Soil Fertility Program, or with the Pacific Northwest's equally successfully Tri-State Grassland Demonstration Program, or with similar programs in the Midwest, the East and Canada, Institute specialists are on the job wherever and whenever their services can be of help. Working closely with official agriculture and with industry, American Potash Institute specialists assist in arranging meetings, setting up demonstrations, interpreting results and getting information to farmers who use plant food.

✻THROUGH SERVICES TO LOCAL PLANT FOOD SOCIETIES

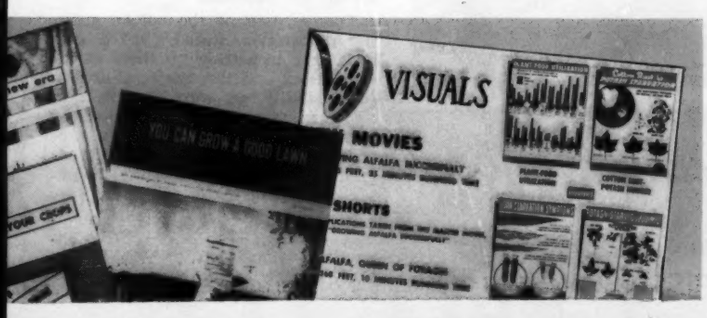
Institute staff members serve in executive capacities with joint advisory-industry bodies, working to develop closer cooperation between industry and government agriculture advisors.

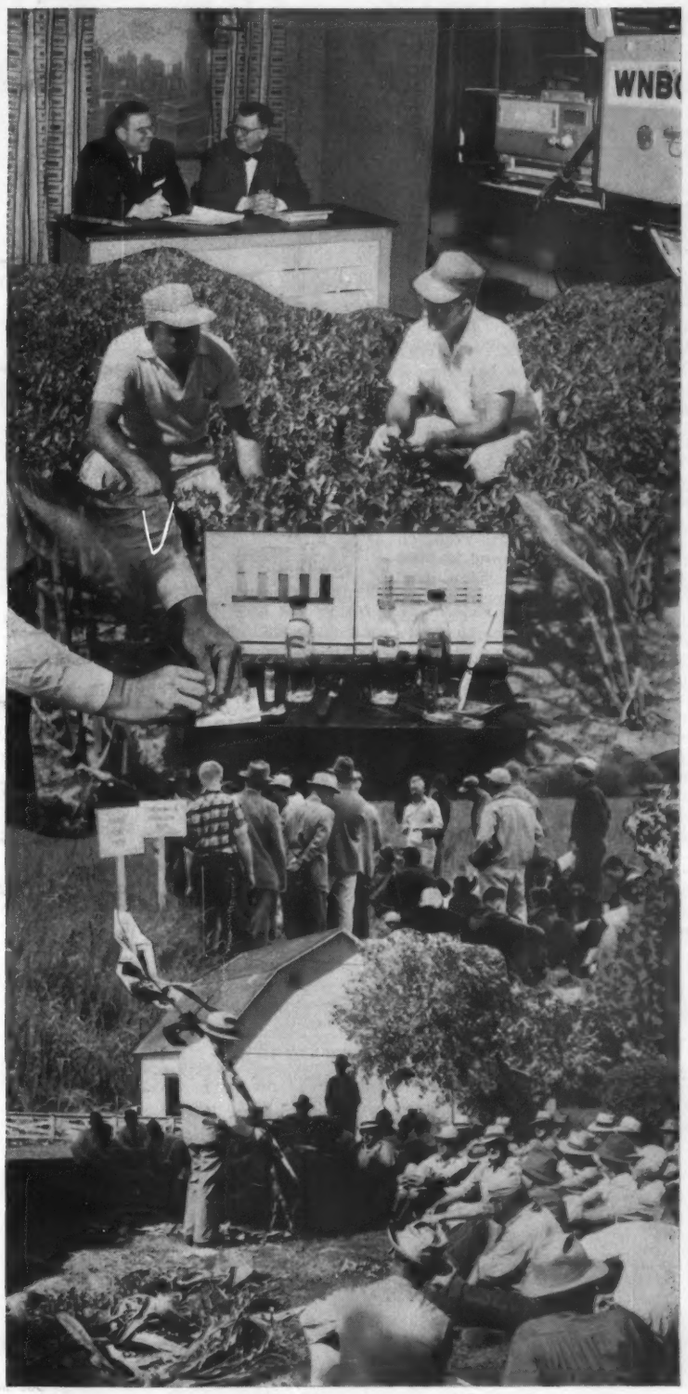
At present, Institute staffmen serve as president of the Soil Science Society of America; president, vice-president, or secretary-treasurer of statewide plant food promotional and educational societies in Missouri, Texas, Georgia, Minnesota, Mississippi, Alabama, Louisiana, and Arkansas; chairman of the Pacific Northwest Plant Food Association Soil Improvement Committee; and other important committees in California, Pennsylvania and Canada.

✻THROUGH TROUBLE SHOOTING IN THE FIELD

Tissue test demonstrations in the field are used by Potash staff members to give fertilizer industry representatives and farmers first-hand knowledge of new methods of determining plant food needs. Other demonstration projects of this sort have included application methods, fertility demonstrations, plant deficiency symptoms, feeding of speciality crops and many others. Little known are projects such as leaf analysis surveys—many of which have uncovered serious plant food deficiencies in orchard, potato, sugar beet, corn, and cotton growing areas.

YOU ARE INVITED
to make use of the services of
The American Potash Institute





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- ☐ Bi-Monthly Magazine "Better Crops"
- ☐ Lawn Handbook
- ☐ Special Garden Book
- ☐ Folders

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Modern Pesticides Plus Research Can Wipe Out Boll Weevil, Group Told

STATE COLLEGE, MISS. — Research geared to wipe out the boll weevil was outlined here Jan. 5 by Dr. T. B. Davich, director of the new boll weevil research laboratory.

He spoke to around 300 entomologists and members of the insecticide industry from six states at the seventh annual Mississippi Insect Control Conference.

"Emphasis will be placed on new approaches in chemical control of boll weevils and basic research to develop new leads in long-range control of boll weevils," he said.

"If we could discover a systemic insecticide that would kill boll weevils for 12 weeks after the cotton is planted, then we would have no more boll weevil problem."

Dr. Davich outlined primary fields of research to be conducted at the new facility, which is scheduled to begin operation next August.

"The boll weevil is an expensive insect," he pointed out. "Actual losses from boll weevils and cost of control average $200 million a year. Total spent for boll weevil research since the pest first appeared in 1896 has been only around $3.25 million."

In welcoming the group to the MSU campus, Dr. D. W. Colvard, president, told of Mississippi's tremendous strides in stepping up farm income.

"Just 20 years ago total farm income of the state was less than $200 million a year," he said. "Last year it was more than $700 million. This increase was made despite decreases in numbers of farms and farmers.

"We are now in an area of technology. Emphasis has passed from the exploitation of land and muscle of man and beast to a greater dependence on management, capital, machinery and chemicals."

Speaking of trends in insect control, M. P. Jones of Washington, D.C., past president of the Entomological Society of America, said:

"Insect control has changed from hand picking of insects from plants to extensive uses of highly potent chemicals. Farming today is big business. The farmer wants and must have accurate information. His insect control program is no hit or miss affair. He must not make a mistake."

Potential trouble for the heavy cotton producing delta was forecast by Dr. Marvin Merkl, USDA cotton entomologist at the Delta Branch Experiment Station.

This year may be a big one for the boll weevil, he said. A record number of weevils, around 14,500 per acre, went into hibernation during the past fall. This compares with around 5,000 in hibernation in 1959.

"With an average emergence next spring, we should have an all time record number of over-wintered boll weevils to greet the 1961 crop," he said.

The entomologist cited heavy second growth of cotton plants and lack of late season poisoning as major reasons for the large number of weevils going into hibernation during the past season.

Reporting on a program designed to prevent such happenings in the future, Dr. E. P. Lloyd, also a USDA entomologist at the Delta Branch Station, said a late season program shows great promise.

In discussing research involving use of both chlorinated hydrocarbon insecticides and phosphates. Dr. Ted Pfrimmer, USDA entomologist at the Delta Station, reported results essentially unchanged from 1959.

Morris Blocker of Scott, Miss. was elected president of the Mississippi Entomological Assn. which met during the Insect Control Conference.

He succeeds C. A. Wilson of State College. Other officers elected during the event included R. P. Colmer of State College, vice president; and A. G. Bennett, also of State College, secretary-treasurer.

Directors elected included Mills Rogers of Cleveland, representing pest control; W. W. Neel of State College, representing the experiment station; T. D. Persons of Jackson, USDA; Horace Lee of Tallulah, La., representing commercial entomologists. The incoming president of the Mississippi Aerial Applicators' Assn., to be elected later this month, was also named a director.

MISSISSIPPI MEETING—Pesticide industry people and entomologists from many Southern states gathered at State College, Miss. Jan. 5 for the seventh annual Mississippi Insect Control Conference. In the top photo are R. P. Colmer, left, chief inspector of the State Plant Board at Mississippi State University, and Dr. T. B. Davich, director of the new boll weevil research laboratory at MSU. In lower photo are officers of the Mississippi Entomological Assn. elected during the meeting. In front row, left to right, are Morris Blocker, Scott, Miss., president; R. P. Colmer, vice president, and A. G. Bennett, State College, secretary-treasurer. At rear are directors W. W. Neel of State College and Horace Lee, Tallulah, La. Other directors not in the picture are Mills Rogers, Cleveland, Miss., and T. D. Persons, Jackson. (Photo courtesy of Mississippi Extension Service)

MCA Issues Booklet on Fork Lift Truck Safety

WASHINGTON — Recommended safe practices and procedures in the operation and service of fork lift trucks are described by the Manufacturing Chemists' Assn. in the sixth in MCA's series on industrial safety guides.

The pamphlet (SG-6) emphasizes that use of fork lift trucks, whether powered electrically, by diesel, gasoline or liquefied petroleum gas, in hazardous areas in which flammable gases, vapors or dusts may be present, may require special safety features and that provisions of Standard No. 505 National Fire Protection Assn. must be strictly enforced.

Use of these powered machines in warehouses and industrial plants can result in a marked saving of time and physical effort, the Safety Guide stated. "However, serious accidents have resulted from misuse and therefore rigid safety regulations must be set up and followed."

The purpose of the safety guide, the association stated, "is to give assistance in setting up these safety regulations and through emphasis on responsibility, on employee training, on equipment maintenance, and on correct application of each type of fork lift truck, to contribute towards greater safety in the chemical manufacturing industry."

Copies of this pamphlet are available at the MCA office, 1825 Connecticut Ave. N.W., Washington, D.C., for 20¢ each.

PK pin-points your product message

Ask us how!

MULTIWALLS • COTTONS • BURLAPS PERCY KENT BAG COMPANY, INC. KANSAS CITY • BUFFALO • NEW YORK

MEXICAN ASSOCIATION ELECTS

MEXICO CITY, D.F., MEXICO—The Mexican Association of Insecticide and Fertilizer Manufacturers elected the following officers at its recent annual convention held at Merida in December:

President, Q P.B. Lauro Navarro (Distribuidora Shell de México, S.A.); vice president, Ing. Alfonso Delgado de Garay (Qúimicas Unidas, S.A.); secretary, Alfonso Leyva (Pennsalt de México, S.A.); assistant secretary, Salvador Dominguez, C.P.T. (Agencias Agricolas Mexicanas, S.A.); treasurer, Ing. Raúl Suárez (Productos D.D.T., S.A); assistant treasurer, Javier Gonzáles, C.P.T. (Quimica Niágara de México, S.A.); member of the council, Jack L. Schack (Montrose Mexicana, S.A.).

Columbia-Southern Now Division of Pittsburgh

PITTSBURGH — Columbia-Southern Chemical Corp., a wholly-owned subsidiary, became a division of Pittsburgh Plate Glass Co. Jan. 1, 1961, it was announced by David G. Hill, president of Pittsburgh Plate Glass Co.

The new division will operate under the name of Pittsburgh Plate Glass Co., chemical division. The principal officers of Columbia-Southern Chemical Corp. have been elected as officers of Pittsburgh Plate Glass Co., effective Jan. 1. They are: Joseph A. Neubauer, vice president and general manager, chemical division, and Chris F. Bingham, vice president, chemical sales.

The change in corporate structure was made to consolidate the operations of Columbia-Southern Chemical Corp. with those of Pittsburgh Plate Glass Co., Mr. Hill said. The general direction and management of the chemical operations will not be affected by this corporate change.

Plants of the new chemical division are located at Barberton, Ohio; Corpus Christi, Texas; Natrium, W. Va.; Lake Charles, La.; Bartlett, Cal.; South Charleston, W. Va.; Jersey City, N.J., and Midvale, Ohio.

New Bulk Fertilizer Plant for Oregon

ALBANY, ORE.—The first Pacific Northwest fertilizer plant to use bulk handling methods—Chemco, Inc., of this city—plans to build a bulk fertilizer plant at Harrisburg.

Construction of a $20,000 concrete storage building is scheduled immediately on a 250 x 165-ft. area leased on a long-term base from the Oregon Electric Railroad Co.

The proposed plant will have a 20,000 sq. ft. concrete floor with tilt-up concrete walls and a truss roof. Also planned is a 20 x 30-ft. office building.

Victor Johnson, manager of the firm's Junction City plant for the past three years, will be manager at the Harrisburg operation where only bulk fertilizer will be sold.

Maine Plant Burns

NORTH PENOBSCOT, MAINE—The Richland Peat Mines, Inc., plant here has been destroyed by fire with a loss estimated by Fire Chief Donald Blodgett at $125,000.

Included in the loss, it was reported, were $50,000 worth of peat in a large storage building, equipment, processing rooms and offices in a one-story wooden building.

Several fuel tanks exploded during the blaze, but no one was injured. A peat drying house and a 1,000-gallon fuel tank, located away from the plant, were saved by firemen maintaining a curtain of water on them.

NEW AMMONIA TANK—The new 7,000-ton anhydrous ammonia storage tank-inside-a-tank is nearing completion at the Tuscola, Ill., plant of the U.S. Industrial Chemicals Co. The tank was expected to be completed before the end of January. According to USI, the tank will store refrigerated ammonia at atmospheric pressure rather than storing it in pressurized tanks at moderate temperatures. Under construction is an inner tank, 88 ft. in diameter and 56 ft. high, which holds the ammonia. This tank is surrounded by 2½ ft. of insulation and another steel tank which keeps moisture out of the insulation. The ammonia is maintained at a temperature of 28° F. below zero by surface evaporation of the ammonia. The evaporated ammonia is recompressed, condensed and recirculated to the tank, USI says.

RETIRES AFTER 45 YEARS

MINNEAPOLIS, MINN. — Bill Geimer, Bemis Bro. Bag Co. flexible packaging department, will retire Jan. 31 after 45 years of service with the company. His fellow-workers honored him during the month with appropriate parties.

Be Sure Your Fertilizer Spreader is TYLER-MADE!

OFFER BETTER SERVICE . . . SELL MORE FERTILIZER WITH A "DO-IT-YOURSELF" TYLER F-2*

*Patent Pending

PORTABLE SPREADER

Once a farmer has broadcast fertilizer with a Tyler F-2 Spreader, he won't be satisfied with any other method . . . time and money are saved by farmers and dealers alike! This is a new SALES TECHNIQUE for progressive dealers . . . a system which will build volume and good-will and pay for itself in sales and rentals in a short time. Startling statements? . . . They are backed by a money-back guarantee.

- **Cuts Costs in Half**
- **Triples Spreading Capacity**
- **Phenomenal Farmer Acceptance**
- **Dealers Increase Fertilizer Sales from 50 to 100%**

SPECIFICATIONS

Body Weight Approximately	1,400 lbs.
Hopper Dimensions	60" x 84"
Wheel Track	74 inches
Axle Rating	8,000 lbs.
Type Axle	Tandem Torsion Spring
Fans—Angled Twin 19", Dia.—PTO Driven	
Wheel Bearings	Sealed Timken Bearing
Capacity	2½ Ton
With Body Extension (19 in.)	4 Ton
Conveyor—7½ in. Mesh Galvanized Steel, Positive Ground Drive (Stainless Steel Optional)	
Spread Pattern	Approx. 45 ft.
Bearings—Sealed, Industrial Type with Grease Fitting	
Spread Capacity Per Hr.—30-60 Acres	
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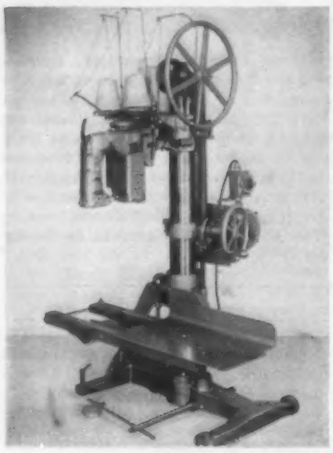
No. 9305—Sewing Head

Union Special Machine Co. has available a sewing head designed for higher sewing speed to close heavy bags. The unit can be operated up to 3,000 rpm, the company states. When run at this speed with a stitch length of 3½ per inch, the conveyor used



should be synchronized to move 70 ft. a minute. The sewing head is of enclosed design, featuring automatic lubrication. It is built for closing cotton, burlap and osnaburg textile bags and multiwall paper bags. The head is suitable for mounting on various Union Special column-type and table-type bag closing machines, including older units which have other heads. It has a stitch range of 3 to 5 an inch, with provision for using filter cord. For complete information check No. 9305 on coupon and mail.

No. 9313—Insecticide Emulsifiers

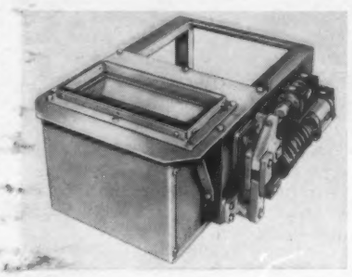
Nopco Chemical Co. has announced the availability of blends of its products Agrimul A-100 and N-100, which the makers say can satisfy the emulsifier requirements of most chlorinated insecticide concentrates. They claim that the use of these emulsifiers contributes to long shelf stability of the concentrate and confers excellent hard water stability upon dilution. The makers state that various features such as spontaneity and tightness of the emulsion can be built into the insecticide formulation by various proportions of the two products. Complete facts on the emulsifier pair are available by checking No. 9313 on the coupon and mailing.

No. 9306—Hopper Scale Bulletin

A four-page, illustrated bulletin, describing in detail an automatic bulk weighing system of Richardson Scale Co., is now available. The system, designated "Class V-37," will handle automatic weighing of bulk materials up to 600 tons an hour, held to tolerances of 1/20th of 1% per weighing. The system includes structural steel tower, receiving hopper, power gates, automatic weigher and discharge hopper. The weigher is of the beam lever type, which employs the "weighing in and weighing out" principle. For copies of the bulletin, check No. 9306 on the coupon and mail.

No. 9307—Gravity Feeder

A gravity feeder precision built for applications requiring accuracy in the feeding and batching of free flowing, non-flooding materials, has been announced by Thayer Scale Corp. The two speed feeder employs a feature which prevents clogging during the slow feed process. At fast speed, the flow control gate is adjusted to its



fully opened position, permitting unrestricted material flow. The feature is a pneumatic vibrator mounted on the flow control gate. It is actuated when slow or dribble flow is desired. The vibrating action assures an even flow of material through the gate, insuring a high degree of accuracy and preventing clogging, the company says. For more complete information, check No. 9307 on the coupon and mail.

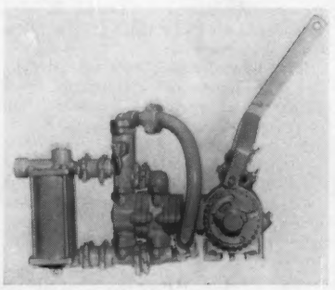
No. 9289—Globe and Angle Valves

Bastian-Blessing Co. has announced a new series of globe and angle valves in ½" and ¾" NPT sizes. The makers

claim that design improvements incorporated in these valves have resulted in extra large flow capacities. Also new on these valves is the rubber flange ring stem seal, which operates on the same "greater the pressure—higher the seal" principle as the exclusive stem seal. This flange ring can be replaced, if necessary, while the valve is in service, according to the makers. Valve bodies are made of shell molded ductile iron, said to be resistant to cracking or shattering from severe impact or thermal shock. The valve bonnet and seal cap are steel. Complete information on the valves is available by checking No. 9289 on the coupon and mailing.

No. 9308—Metering Pump

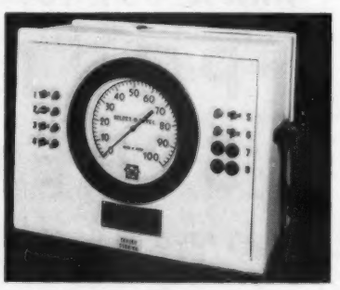
John Blue Manufacturing Co., Inc., offers a new model of metering pump for anhydrous ammonia. Operated by a sprocket, the pump handles 200 to 6,000 pounds per acre on a 40-ft. swath within 80-14 sprocket ratio. The pump is controlled with a light chain pull, has a high capacity tubu-



lar aluminum heat exchanger and outside precision dial. Other features, according to the makers, include double packing glands which are automatically tensioned, ball bearing crankshaft, stemless cartridge valves and stainless plunger and rod. Also available, the makers say, is a high capacity strainer. Full information on the metering pump is available by checking No. 9308 on the coupon and mailing.

No. 9309—Remote Liquid Level Indicator

Barnard & Leas Mfg. Co. offers a remote indicating device for reading the level of corrosive and non-corrosive liquids stored in non-pressure tanks. The makers say that through the use of selector switches, the 12 in.



dial gives instantaneous readings for up to 8 tanks on one model, and up to 16 tanks on another. The unit can be located up to 500 feet from the tanks and will read any level up to 33 feet. Its makers state that a visual bubble indicator mounted on the side of the unit acts as a cross check. Barnard & Leas says that the unit is pre-wired and fully contained in a heavy gauge steel cabinet measuring 21 in. wide by 16 in. high by 10 in. deep. Complete information is available by checking No. 9309 on the coupon and mailing.

No. 9310—Air Scrubbing System

Antipol Corporation has designed a new air scrubbing system which it says can be helpful in solving dust collection problems in chemical plants. The new unit utilizes a water spray over stainless steel screening to entrap impurities. Discharged air may be re-circulated in the plant or released to the atmosphere without

Send me information on the items marked:

☐ No. 9289—Globe and Angle Valves	☐ No. 9309—Remote Liquid Level Indicator
☐ No. 9295—Recording Scale	☐ No. 9310—Air Scrubbing System
☐ No. 9305—Sewing Head	☐ No. 9311—Attrition Mills
☐ No. 9306—Hopper Scale Bulletin	☐ No. 9313—Insecticide Emulsifiers
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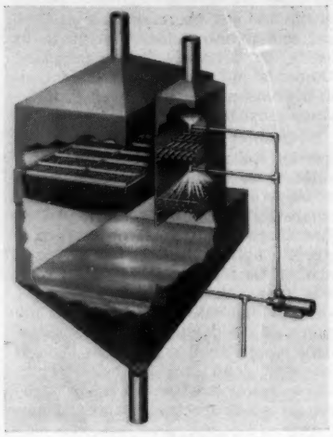
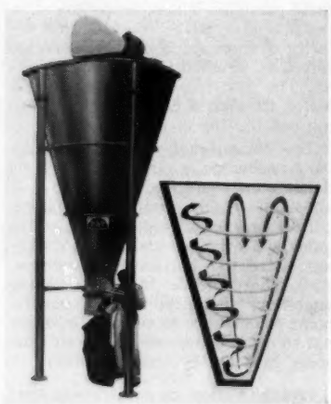
risk of contamination, the makers claim. They also state that the scrubber has no moving parts and is easily maintained. Pressure drop of the air entering the system is low, thus reducing power requirements. Dust recovery, as high as 99% is claimed, as is also a low water consumption



of as little as one gpm per 1,000 cfm of air. The company makes units up to a capacity of 50,000 cfm. Complete information on the scrubbers is available by checking 9310 on the coupon and mailing.

No. 9314—Batch Mixer

J. H. Day Co. announces the availability of the Nauta Mixer, of which it has been granted the exclusive license by its makers in Holland. The new mixer employs a 3-way mixing action which the makers say provides

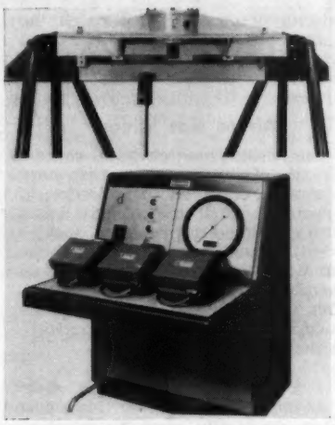


accurate control of materials being mixed, works swiftly, and reduces heat generation to a minimum. The makers describe the action of the machine as having the operation accomplished by a rotating screw positioned along the wall of the conical container. As the screw revolves, it also orbits along the inside wall, resulting in vertical and horizontal cross currents throughout the mixer. As material is mixed, it is spiraled upward by the revolving screw and the orbiting of the screw moves the material in a large second spiral. A third mixing action results after the material is lifted by the screw, the makers state. Complete information is available from the makers by checking No. 9314 on the coupon and mailing.

No. 9311—Attrition Mills

Sprout, Waldron & Co. has announced the availability of a 12-page technical article on the subject of attrition mills as a size reduction unit. The booklet covers construction details, applications, horsepower requirements, capacity comparison charts, operating cost comparisons and other information of similar nature. The booklet is available by checking No. 9311 on the coupon and mailing.

No. 9295—Recording Scale



Dynametrics Corp. has announced a new automatic weighing and recording scale suitable for installation in conveyor lines to record individual weights and to totalize automatically. Features such as indication, or rejection of weights outside a precepted tolerance, are also available, the company says. Complete information on the system is available by checking No. 9295 on the coupon.

DUST CONTROL

Continued from page 1

tries. Degrees of removal, quantity and characteristics of the material to be removed, conditions of the contaminated air stream, space limitations, and cost limitations are but a few of the things to consider when selecting equipment.

There are two basic types of dust collectors, dry and wet. Dry collectors include: (1) Electrostatic, (2) fabric or filter, (3) centrifugal, either low pressure or high efficiency.

Wet collectors include: (1) Chamber scrubber, (2) wet centrifugal, (3) venturi, (4) wet dynamic.

Since the fertilizer industry generally deals with heavier dust loads in their exit gases (0.1 to 20 grains or more per cubic foot) than air filters or electrostatic precipitators are economically designed to handle, most of the dry collection is done by the centrifugal type collectors.

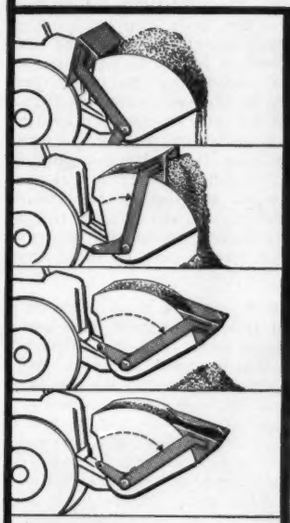
Dust collection equipment is available in many designs with a wide range of effectiveness, and at a varied price range, depending upon the efficiencies expected, materials of construction, and size of equipment. It is usually best to consider assistance from the equipment manufacturer.

Factors which influence the selection of dust collecting equipment are:

1. **Concentration and particle size of fertilizer dust.**
2. **Characteristics of the air stream.**
3. **Characteristics of the fertilizer dust.**
4. **Degree of collection efficiency required.**
5. **Methods of dust disposal.**

The concentration of fertilizer dust

New PAYLOADER® NO-SPILL Bucket



A strikerbar-spillguard blade, by hydraulic power, sweeps forward removing excess material. Blade remains forward in transport to retain load.

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▪ ▪ ▪ Increases daily productive capacity
▪ ▪ ▪ Delivers uniform loads for "batching"

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2. Delivers bigger loads as none is lost in transit.
3. Eliminates the dust nuisance caused by light, dry materials spilling in transit.
4. Prevents the accumulation and build-up of spillage along aisles — saves the cost and time of digging up and reprocessing such spillage.
5. Eliminates the contamination and waste involved when different materials are spilled on the same routes.

Three popular PAYLOADER sizes can be supplied with "No-Spill" buckets — the Models HA, H-25 and HAH. Your Hough Distributor will be happy to show you what they can do to improve materials moving efficiency on your operations. See him today or return the coupon.

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in plant exhaust systems will range from 0.1 to 20 or more grains of dust per cubic foot of air, depending upon the type of process, the volume and velocity of air moving through the equipment, and particle size and density of the fertilizer material at the time of exposure to this air stream.

Air or Gas Stream

The physical and chemical characteristics of the gas stream can have a marked effect on the selection of equipment. High temperature gases with a high moisture content, such as drier exhaust gases, may condense out water if the temperature should drop below the air stream's dewpoint. This, in turn, sets the stage for solids build-up and chemical corrosion within the equipment.

Fertilizer Dust

As mentioned earlier, fertilizer dust offers practically every disadvantage known to complicate the process of dust collection, with perhaps the exception of combustibility and excessive abrasiveness. Nevertheless, each of these characteristics must be considered separately in an evaluation of this sort.

Degree of Collection Needed

This is the basic step in deciding the type of equipment to be used and the amount of money to be spent. It must be realized that the higher the efficiency of the equipment, the higher the cost. Dry cyclone or centrifugal dust collectors, frequently called primary units, fall in the category of low-cost equipment, whereas wet collector units are usually considered high-efficiency, moderate-cost equipment. If higher efficiencies are required, a combination of these two may be necessary.

In most cases, a plant remotely located from other industries and residential areas will not require equipment designed for high removal efficiency. On the other hand, many plants once remotely located are experiencing an influx of residential building and are being forced to consider the more expensive high efficiency equipment. Unfortunately, many plants have at one time or another experienced public criticism for continuing to operate when the wind was in the wrong direction. In some cases, law suits have developed, forcing the manufacturer to cease and desist one way or another.

A safe guiding rule in the selection of dust collecting equipment is to select that collector which will allow the least possible amount of dust to escape and yet be reasonable in first cost and maintenance. If damage to health or property has established standards of air pollution control, often reasonable cost and maintenance must be sacrificed.

It is interesting to note that improving the collection efficiency of a collector to a large degree may not visually alter the appearance of the exhaust air from the stack. When observing stack gases, what is seen is actually light reflected from the surface of the escaping dust or vapor. It is known that the surface area per pound increases inversely as the square of the particle size. This statement means that as much as 90% of the dust load can be collected as coarse fraction without visibly altering the stack discharge appearance.

Equipment

Cyclone dust collectors are perhaps the most widely used collection equipment in the fertilizer industry. This is because it is the least expensive means of dust collection both from an operating and an investment viewpoint.

In a typical cyclone collector, the air stream enters a vertical cylinder tangentially, in order to start its cyclone motion. The dust particles, because of their inertia, will tend to move toward the outside wall and then down into the receiver.

The swirling of this dust-laden air stream imparts a centrifugal force to these particles, which, depending upon the diameter of the collector and velocity of incoming gases, can develop forces up to 2,500 times that of gravity. The dust-free air leaves the collector through a center duct extending out the top of the cyclone.

The dimensional relationships may vary according to the degree of efficiency expected and the volume of air handled. One caution in this regard—the inlet duct should be rectangular, with the vertical dimension being twice the horizontal dimension. Also, sharp bends in the incoming duct-work should be as far from the point of entrance as possible in order not to disturb the streamline air flow going into the cyclone chamber.

At the vortex, or point where the solids discharge from the collector, there will be a tendency to re-entrain the finer solids if air is leaked in at the dust discharge point.

This can be prevented if a discharge gate or valve is attached to the solids outlet. Looking at the operation of a typical cyclone separator, with its spiraling path of both gas and solids, it is understandable why the solid discharge port must be sealed off to incoming air. There is a wide variety of discharge gates to choose from, ranging from a single weight-actuated self-sealing rubber valve to a motor driven double flap valve.

If the blower is downstream from the cyclone, it is very important to collection efficiency not to allow air to leak in at this dust discharge port. These valves should never be taken off permanently to simply remove a plugging problem.

The methods of discharging and disposal of recovered fertilizer dust will vary from plant to plant depending upon the ability to handle process recycle. If extreme care is not given to its recovery from the dust collector, a secondary dust problem may be created within the plant.

In sizing a dust collector the efficiency desired must first be determined, i.e., is the collector to collect particles down to the 30 or 40 micron size or must it collect particles

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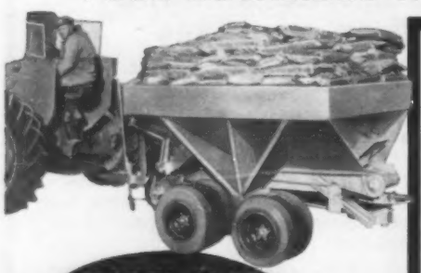

MODEL N-48 FERTILIZER SPREADER

SPECIFICATIONS

8 tires
Length—8 ft.
Capacity—4 tons
Width of Spread—50 ft.
Rate of Spread—60 to 350 lbs. per acre (gearing for higher or lower spreading rates, optional)

CARRIES 5 TONS EASILY!

Both the 4 ton Model N-48 and the 2 ton Model N-28 are shown overloaded with 5 tons of bagged fertilizer to prove load carrying capabilities.

MODEL N-28 FERTILIZER SPREADER

SPECIFICATIONS

4 tires
Length—8 ft.
Capacity—2 tons
Width of Spread—50 ft.
Rate of Spread—60 to 350 lbs. per acre (gearing for higher or lower spreading rates, optional)

- Stainless steel metering gate and guides, micro-meter adjusting screw and full 12" stainless steel conveyor.
- Adequate flotation for soft fields.
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for further information about the N-48 and N-28 pull-type spreaders, plus a full line of other bulk fertilizer spreaders and bodies, bulk feed bodies, bulk and sack bodies and unloaders.

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down to the 5 micron size? This type of efficiency is determined primarily by the inlet air velocity and diameter of the cyclone.

Generally, air velocities in the fertilizer industry range from 25 to 50 fps. An air velocity of 50 fps is required to knock out particles down to 5 microns in size. A 30 fps velocity is generally satisfactory for dropping out particles in the 30 to 40 micron range. With the air velocity and air volume known, the cyclone diameter may be obtained.

The higher efficiencies or air velocities must be paid for with additional blower horsepower. The static pressure drop in a cyclone with an air velocity of 30 fps is approximately 1½ inches of water while the pressure drop in a cyclone with a velocity of 50 fps is 3 to 4 inches of water.

Collector Efficiency

Cyclone collectors are generally effective only in the removal of particles over 5 microns in diameter. This is equivalent to .0002 inch. Unless a series of very small cyclones are used, the collection efficiency will drop in proportion to the quantity of material finer than five microns. The exceptions to this only apply when the dust shows a tendency to agglomerate or where high concentrations of over 100 grains CF appear in the feed stream. In the case of the latter, it should be emphasized that proportionately larger quantities of material will escape through the stack because of higher concentrations.

The most effective method of controlling efficiency is through the proper diameter cyclone. Normally, the smaller the diameter, the higher the efficiency. Small diameter cyclones, however, are somewhat limited in capacity. Multiple units in parallel are frequently used, discharging the dust into a common receiver. Cyclones in series are generally not justified, but increased efficiencies are sometimes attained by increasing the gas through-put.

Reducing the gas outlet duct diameter is another method of increasing collection efficiency, but this requires additional horsepower because of the increased pressure drop.

It should be noted that each method of increasing efficiency results in a higher internal gas velocity in the cyclone, which increases the centrifugal force or the action separating the dust particles from the air. It is recommended that ducts to a cyclone be sized so that the gas velocity in the inlet duct will be 50 fps.

Another factor which affects a given cyclone's efficiency is turbulence. All possible turbulence should be eliminated in order to maintain a streamline air flow in the cyclone. One should make sure that welds on the inside cyclone walls are ground smooth. Periodic inspections should be made to remove any fertilizer build-up on the inside walls of the cyclone. Do not disturb the streamline flow in a cyclone by misshaping it, i.e., denting it by pounding on it. This is a good reason for always having the cone fabricated from 3/16 inch plate.

Selection of Blower

The blower is of course an important consideration in the operation of a cyclone dust collector. Selection of a blower or fan will depend on a number of critical variables. Once these have been established and a fan selected, the primary collector can be sized in keeping with the following variables:

1. **Volume of air handled.**
2. **Static pressure across fan.**
3. **Type of solids in air stream.**
4. **Space limitation.**
5. **Efficiency.**
6. **Temperature of gas.**
7. **Corrosion features of gas.**

The volume of air handled will depend upon the particular fan application. A batch mixer will require 2,000 to 3,000 cfm to effectively remove vapors, while a continuous ammoniator will require somewhat more, depending upon the diameter of the unit. As little as 500 to 1,000 cfm should maintain a sufficiently low back pressure in elevator equipment to prevent dusting. Dryers and coolers can require as much as 10,000 to 30,000 cfm depending upon the diameter of the equipment. The linear velocity of the air, however, should not exceed 400 ft./min. through the dryer or cooler drum. Increasing its linear velocity beyond approximately 400 ft./min. will cause pick-up of particles above 65 mesh.

Having established volume requirements of the blower, the next step is to calculate the required static pressure.

Static pressure will depend upon the type and size of collection equipment to be installed. With these two figures, one can quickly determine the fan velocity and horsepower requirements for any specific blower from a blower handbook or manufacturer's catalog.

If a high concentration of solids is expected in the gas stream, as in the case of a dryer or cooler, and these solids are to pass through the blower, a paddle wheel type blower should be used rather than one of the vane types. This may require somewhat more horsepower but, generally speaking, this equipment is more rugged and will withstand the corrosiveness of fertilizer exhaust gases.

Space Limitations: Direct drive blowers generally are more compact than belt driven blowers, however, unless a variable speed motor or gear reducer is used, they lack the adjustable feature and are usually more expensive.

Efficiency: Most blower catalogs will show in italics the optimum conditions for running a particular fan. Such factors as static pressure, brake horsepower, shaft rpm, and tip speed are related to give the maximum volume for each size blower available.

Temperature: Since the sleeve and ball bearing have critical operating temperatures, it is essential that high exit gas temperatures be exhausted through blowers with outboard bearings. In the case of fertilizer, this should always be true.

Corrosion: Most fan models are available in mild steel, cast iron casing, stainless steel or similar metals. If the rpm is relatively low, coating material may be used to prevent internal corrosion. Some of the low rpm fans are even rubber lined.

It is recommended that a blower be located as close as possible to the operation it is exhausting. Although the cyclone will theoretically operate under pressure or vacuum, it is better to place the blower after the cyclone to prevent buildup of solids in the blower and avoid dust losses and nuisances which could result from small leaks in the system.

—From "Processes to Profit" manual issued by International Minerals & Chemical Corp.

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Conventional Concepts of Liability Changing With Complex Products

By N. H. Munson*

Legal Department
The Dow Chemical Co.
Midland, Mich.

PRODUCTS liability claims and insurance are presently the subjects of many discussions, studies and writings. We need to remind ourselves that we are in a world of constant change where people are becoming more claims conscious and the number and types of claims have skyrocketed along with the judgment amounts granted.

This seems to be an age when people are increasingly preoccupied with both the assertion of "rights" and the fixing of "responsibility." It is hardly surprising then, that there is a trend to hold manufacturers more and more "responsible" for their products and that individuals increasingly assert their "right" to remuneration for any harm or damage that may accrue through the handling or use of those products.

Whether or not we agree with the judgments of the courts as to those rights and responsibilities is beside the point, and debating them is like shouting, "You can't do this to me," as the jail door clicks shut. It is more to the point to redouble our efforts to protect ourselves both through internal controls and reappraisal of insurance coverage.

It is a fact that conventional concepts of "negligence" will no longer hold, that claims are not restricted to any classes of products and that high judgments have been awarded from seemingly unforeseeable occurrences.

It is likewise true that one may be subject to liability claims if he makes any basic or consumer product to sell, give away or in any way to be used or handled by others away from the manufacturer's premises and after he has relinquished possession of it.

Someone might propose that the simplest solution to this entire problem would be to limit oneself to the production of non-hazardous products. But that is no answer at all, because there really is no such thing. The point is that "hazard" as we commonly think of it is not necessarily identical with, or related to, potential liability.

As an example, the largest court case ever brought against my own company concerned a product widely recognized as hazardous. But the claimed liability in this case was related in no way whatever to the "hazard."

So perhaps the starting point is to reorient our minds and try to think not just of "hazard" in its common sense, but of the broader spectrum potential liability.

Now then, to what extent are we living up to our responsibilities in the matter of control? Better, I believe, than is generally thought. Here are some of the things a company does before putting a new product on the market:

1. It spends millions on research;
2. It patents its findings and makes careful searches to avoid infringing the patents of others;

3. It probably spends more millions in the conduct of pathological, toxicological, sensitivity and general physical and chemical tests to which the product reasonably and foreseeably may be subject;

4. The firm makes sure that its product and sales practices comply with federal, state and municipal laws;
5. It conducts market tests to satisfy its officers as to the needs for, and possible uses of, the product;
6. The company establishes specifications for manufacture, sale and distribution;
7. It conscientiously explores the pitfalls of improper labeling, again looking to possible legal consequences. The utmost is done to properly name and identify the product. Further, specific directions are given for use, precautions and warnings are noted where necessary, and the consumer and his doctor are advised, if necessary, what to do if the product is misused;
8. Systems of quality control are set up to insure that each batch of the product meets established specifications;
9. Batch samples are retained to discourage fraudulent claims;
10. Reliable distributors are selected;
11. Disclaimers are employed to encourage consumers to use the product properly;
12. Salesmen and distributors are educated and cautioned not to advocate uses, or methods of use, other than those recommended.

This presents a pretty good picture in behalf of the manufacturer. We can be proud of the chemical industry and of individual companies for exercising great care and exhibiting responsibility of the highest order.

Unfortunately, all of this is still not enough. The increasing number of claims is obvious evidence that our efforts are by no means 100% effective. We must therefore increase even further our caution and alertness.

I think it is clear that no precautions can ever be relied upon to provide complete protection. No one can foresee the infinite variety of circumstances in which a product may cause some sort of injury or damage. No one can predict when a judge or jury will hold a manufacturer liable, irrespective of any negligence on his part. And no one can predict what further new interpretations of law may make us even more vulnerable than we now are.

The control aspects of this subject have been chosen first because effective protection logically begins at home and, further, a house in good order is in a good position to buy insurance protection advantageously. Now let's consider what products liability insurance can or will do, and cannot or will not do.

First, just briefly, what is it? I would expect that most of this protection is bought as part of a package known as a Comprehensive General Liability policy, all or parts of which may be had in varying forms.

The CGL policy commonly concerns itself with five hazards—premises — operations hazard, elevators hazard, independent contractors hazard, products hazard, and contracts hazard.

The products hazard is the one with which we are concerned just now. Very simply, this insurance applies to claims arising from the manufacture, sale, handling, use or consumption of products away from the manufacturer's premises and after he has relinquished possession of them.

As with other insurance, the coverage is subject to "limitations," "conditions" and "exclusions," and in this area one usually gets what he pays for. It is important to read carefully all of these "fine print" conditions, limitations and exclusions because in essence they usually represent protection you don't have whether or not you think you bought it.

In common policy definitions of "products hazard" it will be found that protection applies to accidents or occurrences involving one's products only when they are not on premises owned or controlled by the manufacturer and after he has relinquished possession and control of them.

There is an "operations" coverage involved here, too, and this applies particularly to service organizations or service segments of manufacturing concerns. This covers accidents which occur only after such operations have been completed or abandoned, and again provided that the occurrence is away from any premises owned, rented or controlled by the insured. And the operations better not have been abandoned because they were improperly or defectively performed.

Furthermore the term "completed operations" does not, for example, include pick-up or delivery, except from or onto a railroad car. It does not include the maintenance of vehicles owned or used by or for the insured. Neither does it include the existence of abandoned or unused materials.

Under such definitions it is easy to see that only limited protection is afforded. For example, there is no protection against loss of customers or loss of good will. However, if the customer, or the user of the product —sues for the loss of good will resulting somehow from your product, the maker will usually be protected against the judgment.

In similar fashion, under a so-called "defective products clause," you will find that you cannot recover the costs of repairing or replacing a defective product or any parts thereof—neither the cost of the product itself nor any other costs incurred in the process of repairing or replacing it.

Typically, this same clause also says that a customer's loss of use of the defective product is not insured and there is no guarantee of the performance of the product. In the latter case, let's say you sell a product that is supposed to produce at a certain capacity and the customer sues because it will produce at only half the expected rate. This is not covered.

There is one other point to be mentioned. A policy may refer to an "accident" or it may refer to an "occurrence." There is a fine line of

(Turn to LIABILITY, page 36)

*From talk presented on Chemical Products Liability panel, Mid-Year conference, Manufacturing Chemists' Assn., New York City, Nov. 22, 1960.

PROFITS GROW BEST
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Liquid fertilizers are booming. In the past two years alone, manufacturing plants have doubled and retailers report sales as high as 100 tons of liquid to every ton of dry!
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TAMPA, FLORIDA

Division

TENNESSEE TC CORPORATION

PRODUCTION PROCESS PATENTS

2,966,440

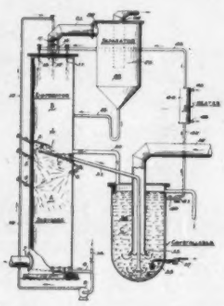
Insecticidal Compositions. Patent issued Dec. 27, 1960, to Philip Gerolt, Herne Bay, England, assignor to Shell Oil Company. An insecticidal composition comprising a solid solution of an insecticide and a solid resin, the weight ratio of said insecticide to said resin lying within the range of from about 9:1 to about 3:7, the insecticide being selected from the group consisting of 1,2,3,4,10,10-hexachloro - 1,4,4a,5,8,8a - hexahydro-1,4,5,8 - endo - exo - dimethanonaphthalene, 1,2,3,4,10,10 - hexachloro - 1,4, 4a,5,8,8a - hexahydro - 1,4,5,8 - endo-endo - dimethanonaphthalene, 1,2,3,4, 10,10-hexachloro-6,7-epoxy - 1,4,4a,5,6, 7,8,8a-octahydro - 1,4,5,8 - endo - exo-dimethanonaphthalene and 1,2,3,4,10, 10-hexachloro-6,7 - epoxy - 1,4,4a,5,6,7, 8,8a-octahydro-1,4,5,8-endo - endo - dimethanonaphthalene and the resin being selected from the group consisting of colophony, copal, wood resins, dammar resin, shellac, kauri resin, coumarone resins, mono- and poly-vinylacetylene resins, petroleum resins, styrene resins, phenol-aldehyde resins, alkyd resins, polyvinyl ester resins, polyvinyl alcohol resins, polyvinyl acetal resins, epoxy resins, polyisocyanate resins, chlorinated polyphenyl resins, sulfur, gum resin esters, rosin ester resins, hydrocarbon terpene resins, and chlorinated paraffin resins.

2,966,516

Preparation of Urea. Patent issued Dec. 27, 1960, to Fred Applegath, and Raymond A. Franz, El Dorado, Ark., assignors to Monsanto Chemical Co., St. Louis. A process for preparing urea by reacting carbon monoxide and ammonia in the presence of sulfur, the improvement consisting of depositing the sulfur on an inert carrier selected from the group consisting of activated wood charcoal, activated petroleum base carbon, silica gel, attapulgus earth, and activated alumina having an available surface area of at least 50 square meters per gram and thereafter passing the carbon monoxide and ammonia in a proportion of at least two molecular proportions of ammonia for each molecular proportion of carbon monoxide and sulfur through the bed of inert carrier having sulfur deposited thereon at a temperature of about 60° C. to about 300° C.

2,966,394

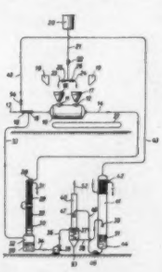
Method and Apparatus for Producing Ammonium Sulfate. Patent issued Dec. 27, 1960, to Joseph Van Ackeren, Pittsburgh, Pa., assignor to Koppers Co., Inc. A process for recovering the ammonia from coke oven gas as large crystals of ammoni-



um sulfate which comprises contacting the gas in a scrubbing zone with a solution which contains sulfuric acid and is unsaturated as to its concentration of ammonium sulfate to absorb substantially all of the ammonia from said gas, thereafter contacting said substantially ammonia free gas in an evaporating zone with a heated solution of ammonium sulfate to remove water from said heated solution to increase the concentration of ammonium sulfate therein so that said solution reaches a supersaturated condition, then contacting said supersaturated solution in a crystallizing zone with previously formed crystals of ammonium sulfate in the presence of free ammonia to release the supersaturation of the solution by deposition on said crystals, removing the solution so desupersaturated from said crystallizing zone, and heating and returning the latter solution to said evaporating zone at said heated solution.

2,965,470

Method for Manufacturing Phospho-Nitrogenous Fertilizers. Patent issued Dec. 20, 1960, to Ferdinando Ravazzi, Turin, Italy, assignor to Rumianca S.p.A., Turin, Italy. A method of producing phospho-nitrogenous anhydrous and granulated fertilizers from a material selected from the group consisting of phosphorite and superphosphate, which comprise the steps of admixing said material



with aqueous sulphuric acid in a quantity such that a homogeneous acidic magma is obtained having an acidity which corresponds to a content of 4.5 to 5.5% of free H_3PO_4 and a moisture content of at most 10% by weight, thereupon confirming the magma in a rotatable fluid-tight reaction zone, admixing the magma with a further quantity of aqueous sulphuric acid to obtain a thick slurry, continuously delivering gaseous ammonia into the slurry within the reaction zone while rotating said zone, thereby causing steam to be evolved from the slurry, establishing

A $60,000,000 STEP IN ARMOUR'S PROGRAM OF PROGRESS

As America's need for more and better fertilizers grows, Armour Agricultural Chemical Company continues to improve its products and expand its facilities. The latest example of Armour's progressive philosophy is its new $60,000,000 program for increasing its nitrogen and phosphate production facilities. By 1962, new installations will approximately TRIPLE Armour's production of these materials. A nitrogen plant will be built near Sheffield, Alabama, and a phosphate plant near Fort Meade, Florida. In addition, facilities for manufacturing mixed fertilizers will be expanded and modernized.

New installations larger facilities and ever-improving technical methods have made Armour the most respected name in the fertilizer industry: a name synonymous with quality and dependability. The Armour Program of Progress is devoted to improving the products and services that have made the Armour "A" a symbol of quality in the fertilizer industry . . . the "BIG A" in agriculture.

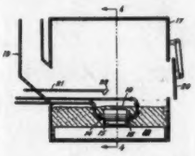
31 SALES OFFICES SERVING THE FERTILIZER INDUSTRY

ARMOUR AGRICULTURAL CHEMICAL COMPANY
General Offices, Atlanta, Georgia

a unidirectional flow of the steam and unreacted ammonia from the reaction zone to a condensation zone, thereby obtaining an ammonia-containing condensate in said condensation zone, withdrawing the condensate from the condensation zone, recovering gaseous ammonia from the condensate, recirculating the recovered ammonia into the reaction zone, and withdrawing from said reaction zone a phospho-nitrogenous granulated fertilizer.

2,965,471

Method and Apparatus for Producing Mixed Fertilizers. Patent issued Dec. 20, 1960, to Derrick H. Stassfort, Calumet City, Ill., assignor to Swift & Co., Chicago. In the process for the manufacture of mixed fertilizers the improvement which com-



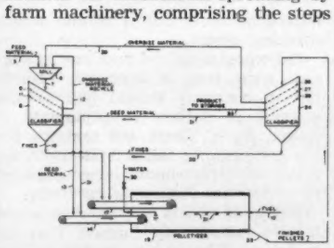
prises: continuously passing streams of concentrated mineral acid and ammoniacal substances into a substantially enclosed reaction zone beneath the surface of a bed of fertilizer material; contacting said substances within said reaction zone whereby to react each with the other and to secure substantially complete absorption of said ammoniacal substance; allowing substantially the entirety of the heat and products formed by said reaction to immediately pass from said reaction zone to directly contact said fertilizer material; and admixing said reaction products with said fertilizer material whereby to obtain substantially complete absorption of any unreacted ammoniacal substance and to further dry said fertilizer material.

2,965,468

High Nitrogen Plant Food. Patent issued Dec. 20, 1960, to Derrick H. Stassfort, Calumet City, and Everett N. Mortenson, Chicago, Ill., and Marion Dwight Sanders, Chesterton, Ind., assignors to Swift & Co., Chicago. A process for the manufacture of mixed fertilizers which comprises reacting equimolecular proportions of sulfuric acid and ammonia to form ammonium acid sulfate, mixing the ammonium acid sulfate with fertilizer solids containing superphosphate, and adding to the resulting mixture ammonia-ammonium nitrate in an amount to furnish sufficient ammonia to convert the ammonium acid sulfate to ammonium sulfate and to ammoniate the superphosphate to produce a mixed fertilizer having a ratio of nitrogen to P_2O_5 greater than about 0 45 to 1 and containing ammonium sulfate, ammonium nitrate, and ammoniated superphosphate.

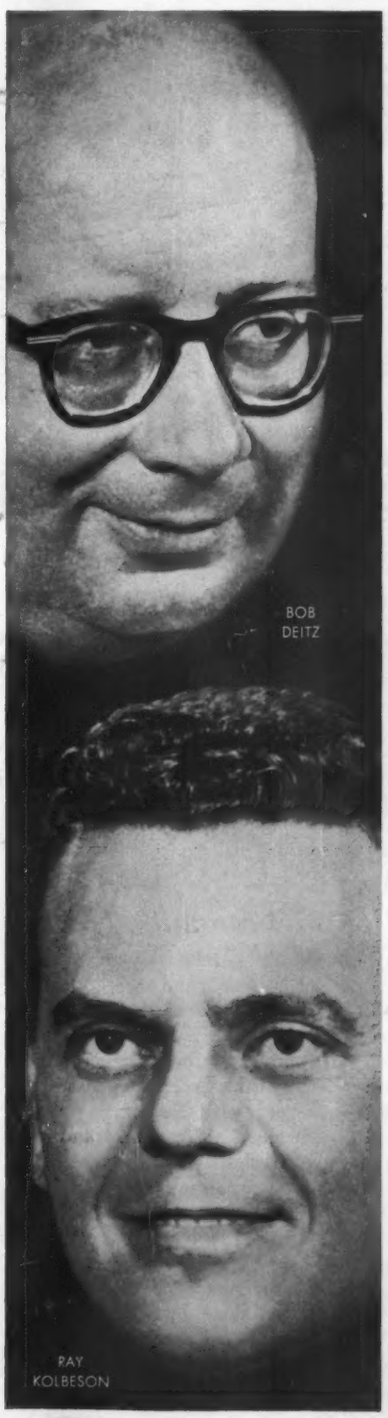
2,965,472

Manufacture of Triple Superphosphate. Patent issued Dec. 20, 1960, to Edward W. Huxley and William R. Pullin, Pasadena, Texas, assignors to Phillips Petroleum Co., Bartlesville, Okla. A process for pelleting cured triple superphosphate so as to produce improved pellets of generally round shape, generally smooth surface, and substantially uniform size, suitable for mechanical spreading by farm machinery, comprising the steps



of using a cured triple superphosphate as a feed material to said process, passing said feed material to a milling zone and comminuting said feed material therein, passing said comminuted feed material to a two-stage classification zone consisting essentially of a first and second screening means disposed in series therein, recycling a first oversize material collecting on said first screening means to said milling zone, the portion of said feed material passing through said first screening means having a particle size smaller than 6 to 10 mesh, passing oversize feed material collecting on said second screening means as a first seed material to the upper end of a rotating cylindrical pelleting zone via a first conveying means, the first feed material to said pelleting zone having a particle size between 6 and 14 mesh, a second classification zone for the pelleted product of said process having a third, fourth and fifth screening means disposed in series therein, the portion of said pellets collecting on said third screening means in said second classification zone being returned as a second oversize material to said milling zone, the portion of said pellets passing through said third screening means having a particle size less than 6 mesh, the portion of said pellets collecting on said fourth screening means in said second classification zone being passed to storage as product and having a particle size between 6 and 12 mesh, the portion of said pellets passing through said fourth screening means having a particle size less than 12 mesh, the portion of said pellets collecting on said fifth screening means in said second classification zone being passed as a second seed material having a particle size between 12 and 14 mesh to said first conveying means and admixing with said first seed material thereon, the admixed first and second seed materials containing less than 8 percent by weight of water entering the upper end of said pelleting zone, then spraying water on the surface of a tumbling bed of said admixed seed material in said pelleting zone until the water content averages from 8 to 10 percent by weight as the only water content addition step, the portion of said pellets passing through said fifth screening means in said second classification zone and having a particle size of less than 14 mesh being passed to said pelleting zone via a second conveying means and being introduced into said pelleting zone downstream of said spraying water, the portions of said feed material passing through said second screening means in said first classification zone and having a particle size of less than 14 mesh being admixed with said pellets on said conveying means prior to introduction into said pelleting zone, the admixed fines on said second conveying means comprising 20-40 percent by weight and having a particle size smaller than 14 mesh, then tumbling said bed in said pelleting zone while heating said

These men guard the quality of your fertilizer chemicals from U.S.I.



Many U.S.I. customers in the fertilizer industry know Bob Deitz and Ray Kolbeson. As chief and assistant chief chemists at our Tuscola, Ill., Plant Laboratory, their imprint is on each tank truck and car of U.S.I. fertilizer chemicals — ammonia, nitrogen solutions, sufuric acid and phosphoric acid — shipped from Tuscola. They head a team responsible for the quality of all fertilizer chemicals made at Tuscola.

Yet these chemists do much more than simply provide the customer with an analysis of each shipment. They inspect plant production continually to help maintain the consistent quality customers require. And the analytical knowledge possessed by Bob, Ray and their colleagues is at the disposal of U.S.I. customers for all sorts of problems.

For example, they will perform special analyses for trace materials or uncommon constituents . . . will provide both standard and special test procedures. They have helped newcomers to the fertilizer business set up labs by providing advice on equipment, procedures, personnel. And they have carried out check analyses with customer labs.

Both men bring wide experience in the field to their jobs. Bob has been an industrial chemist for 20 years—three of them as a referee analyst in inorganic chemistry. He is now a member of the National Plant Food Institute's Task Force for Liquid Fertilizers. Ray numbers 12 years as a research and industrial chemist.

These men work for you as well as for us. A call to U.S.I. Heavy Chemical Sales in New York — OXford 7-0700 — can put them at your service.

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bed in a range between 125-200° F. until the moisture content of the resulting pellets is between 3 and 5 percent by weight of said pellets, and passing said pelleted triple superphosphate to said second classification zone for separating out said pelleted cured triple superphosphate as product.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of $25 must accompany each notice of opposition.

Dura-Mulch, in capital letters, for mulch. Filed April 19, 1960, by Barrow Forest Products Co., Ashoskie, N.C. First use March 18, 1960.

Plantco, for fertilizers. Filed June 15, 1960, by Plant Care Specialties, Inc., Medina, Ohio. First use Aug. 3, 1959.

HCA, in capital letters, for herbicides. Filed July 29, 1959, by Allied Chemical Corp., New York. First use Sept. 13, 1954.

Valdan, for rodenticide. Filed Sept. 8, 1959 by Private Brands, Inc., Kansas City, Kansas. First use July 28, 1959.

Urab, in capital letters, for herbicides. Filed Oct. 21, 1959, by Allied Chemical Corp., New York. First use July 8, 1959.

Mala-Spray, in capital letters, for insecticide for control of flies and other insects. Filed May 20, 1960, by M. F. A. Oil Co., Columbia, Mo. First use April 22, 1960.

GPA, in capital letters, for fertilizers. Filed June 4, 1959, by Virginia-Carolina Chemical Corp., Richmond, Va. First use Feb. 23, 1959.

Urograph, in capital letters, for diagnostic aid for laboratory use in the determination of urea nitrogen levels. Filed Dec. 8, 1959, by Warner-Lambert Pharmaceutical Co., Morris Plains, N.J. First use Aug. 8, 1959.

Rutex, in capital letters, for chemical composition for use as a water-retaining, water-absorbing coating on plant material. Filed Dec. 16, 1959, by A. E. Staley Mfg. Co., Decatur, Ill. First use Nov. 2, 1959.

Brom-O-Gas, in capital letters, for fumigant. Filed Jan. 12, 1960, by Great Lakes Chemical Corp., Manistee, Mich. First use June 1, 1959.

Shur-Gain, within oval design, for fertilizers. Filed Feb. 17, 1960, by Canada Packers, Ltd., Toronto, Ontario, Canada. First use, January, 1940; in commerce, January, 1940.

"R" Brand, for soil conditioner consisting of pulverized aged redwood sawdust and shavings humus. Filed April 8, 1960, by Lindauer & Co., San Francisco. First use July 1, 1959.

Felco, in hand-drawn capital letters, for fertilizers. Filed June 8, 1960, by Farmers Elevator Service Co., Ft. Dodge, Iowa. First use August, 1948.

VELSICOL

INSECTICIDE OUTLOOK for 1961:

plans, promotions, and favorable trends indicate expanded sales opportunities for formulators!

HEPTACHLOR

...growing demand!

Extensive tests conducted by leading experiment stations prove that Heptachlor can't be beat for effectiveness in control of soil insects. Demand for Heptachlor continues to grow. In 1961, you will see more intensive advertising to capture even more sales. Besides major regional and state media, Heptachlor will be promoted in hundreds of local newspapers and billboards.

ENDRIN

...branching out!

Endrin is relatively new, in terms of uses and acceptance. 1960 saw the development of many new Endrin markets. Apples, potatoes, cotton and many other crops were widely treated with Endrin during the past year. The use of Endrin-Methyl Parathion mixtures for cotton insect control proved especially popular and effective. In 1961, you can anticipate a big Endrin demand in all markets, helped along by strong promotional programs keyed to local requirements.

CHLORDANE

...better than ever!

If they held popularity contests for insecticides, Chlordane would win the gold cup every year. Lawn and garden use has risen sharply as Chlordane has become established in crabgrass control. Chlordane is preferred because of its unmatched safety and performance record. 1961 promotional plans call for greatly increased local advertising, more national advertising, sales promotion and educational materials, and many other innovations.

WATCH FOR MORE DETAILS ON VELSICOL INSECTICIDE SALES SUPPORT PROGRAMS!

VELSICOL CHEMICAL CORPORATION

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"Who ever taught YOU how to stack bags?"

Chemical and Industrial Gets Award to Build Two Plants on Iowa Site

SAN FRANCISCO—Contracts for construction of an ammonium nitrate plant and a citric acid plant at Ft. Madison, Iowa, have been awarded to the Chemical & Industrial Corp., Cincinnati, Ohio, by the California Chemical Co., a subsidiary of Standard Oil Co. of California.

Fred Powell, president of California Chemical, said the two units, part of a complex of fertilizer plants that the company is building at Ft. Madison, are expected to be completed in the fall.

Plant capacities for the two units will be 150-200 tons per day for the ammonium nitrate plant and 250 tons daily for the nitric acid plant.

Grading and compacting of the plant's site at Ft. Madison have been completed by the Cameron-Joice Co. of Keokuk, Iowa. Construction is proceeding on schedule and, upon completion, the California Chemical Co. through its Ortho Division will market a complete line of chemical fertilizers throughout the midwest and northeastern states.

Packaging Machinery Show To Be Larger in 1961

DETROIT — Months before the opening of the Packaging Machinery Manufacturers Institute Show of 1961 the event is assured of being 40% larger than the preceding PMMI show held in November, 1959, according to W. W. Anthony, Jr., chairman of the show committee. He reports that 173 manufacturers have contracted for exhibit space in Detroit's Cobo Hall from Nov. 7-10, 1961.

Mr. Anthony noted that the 1961 show will continue its policy of specific display confinement to packaging machinery and closely related products. He added that the larger display area needed for the PMMI Show of 1961 was due chiefly to many exhibiting firms requesting larger exhibit booths than they occupied in past PMMI Shows.

LIABILITY

(Continued from page 32)

difference here, but it is one worth thinking about.

No outsider should presume to suggest what type of insurance protection a company should buy or the amount in dollars of protection it should have. These are matters for the company to decide. However, all chemical firms should be encouraged to review its exposures carefully.

Sleepless nights may be minimized if one can satisfy himself that he is doing all he can to control claims and that he has bought the type and amount of protection he needs to avoid financial catastrophe.

Alabama Soil Group Elects Officers

MONTGOMERY, ALA. — At the sixth annual meeting of the Alabama Soil Fertility Society in Montgomery recently, Dr. Clarence Wilson of Birmingham was chosen to head the group for 1961. The new president, formerly head of the soil testing laboratory at Auburn, is now agronomist with U.S. Steel Corp. He takes over the society's helm from Frank E. Boyd, Virginia-Carolina Chemical Corp., Montgomery. Succeeding Charles Summerour, American Potash Institute, Montgomery, as secretary-treasurer is Dr. J. M. Brown, National Plant Food Institute, Auburn. Both Mr. Boyd and Mr. Summerour were instrumental in organizing the Alabama society and had served as leaders for the past six years.

Other new offiers are: T. W. Allen, Attalla, and George Williamson, Agricultural Chemical Service Company, Montgomery, vice presidents; and Emory Brooks, Albertville, Menza Head, Montgomery, Raymond Cartledge, Cottondale, Fa., and J. T. Belue, Auburn, directors.

Four Alabama county agents with outstanding records in soil fertility work were awarded meritorious service plaques by Mr. Summerour. In making the awards, he pointed to the key role played by extension workers in Alabama in increasing yields of all crops in the state. Mr. Summerour pointed out: "This year, new record yields were made on peanuts and soybeans in Alabama. The credit is due to good recommendations, backed up by research, and our education work on soil fertility."

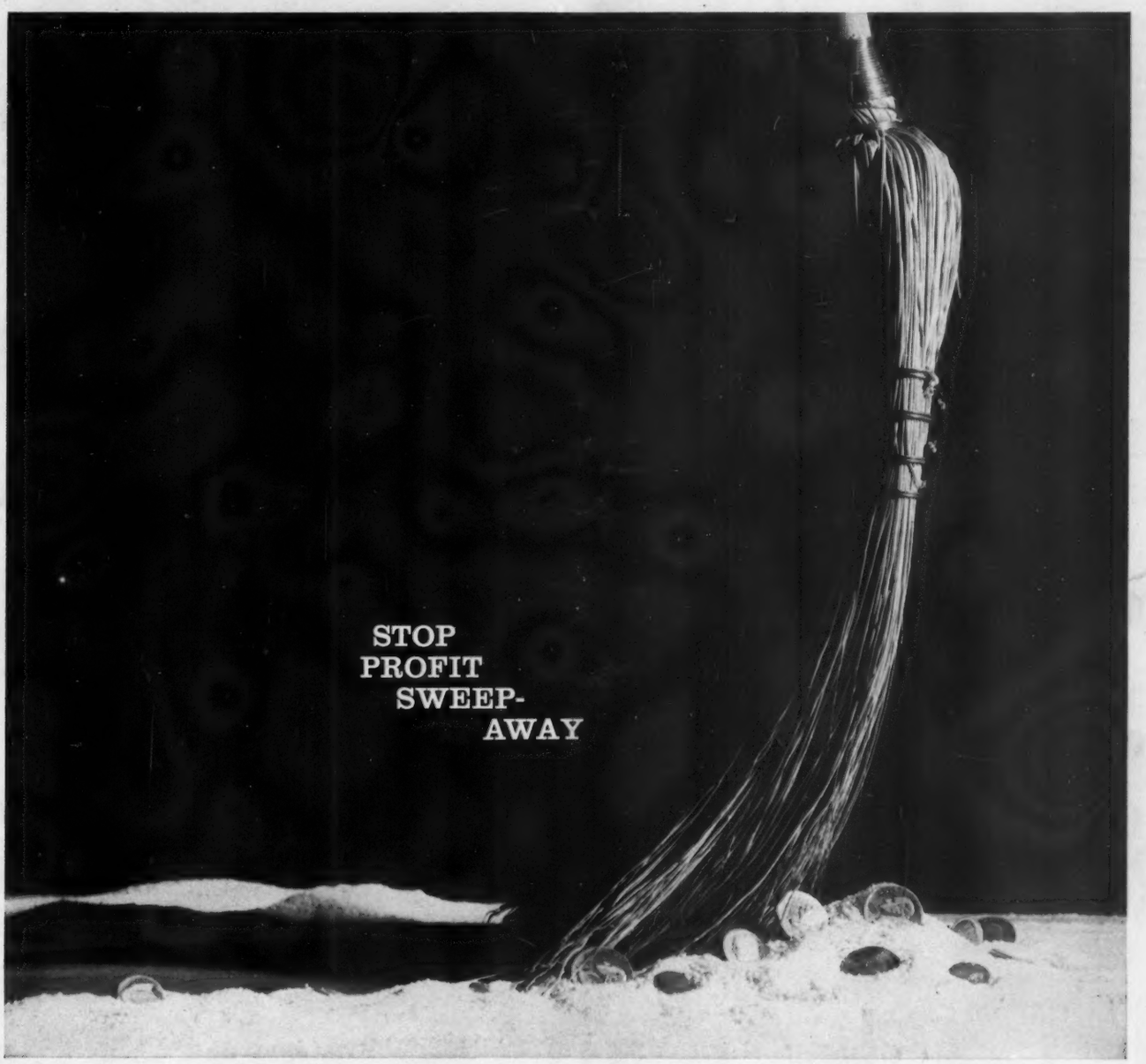
Agents receiving the honor were: George D. H. McMillan, Houston County; A. V. Culpepper, Monroe County; F. K. Agee, Limestone County, and Cecil Davis, Pickens County.

WACA Convention

SAN JOSE, CAL.—The 1961 spring meeting of the Western Agricultural Chemicals Assn. will be held at the Disneyland Hotel, Anaheim, Cal., March 13-15, it has been announced by C. O. Barnard, executive secretary of the group. Program plans will be announced later, Mr. Barnard said.

STEPPED-UP MINING

DENVER, COLO.—Climax Molybdenum Co. has announced a project for increased production of its Bartlett Mountain mine above Leadville, Colo. The company says it will spend $20 million on the program.



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By switching to St. Regis® pasted valve bags, you can actually save up to 20¢ on every ton you pack, a cost reduction of from $5 to $10 per thousand bags.

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You'll also want to look into another valuable packaging development from St. Regis—new Poly-Lok*, the polyethylene-film valve insert that virtually ends bag leakage.

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Pasted valve bags are another example of St. Regis *Packaging-in-Depth*. This complete bag service assures you of the *right* bag, the *right* machinery to pack it, plus the services of highly-skilled engineers. To meet your *future* needs, this program also includes continued research to develop improved packaging methods and economies.

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PACKAGING-IN-DEPTH BY St.Regis BAG DIVISION

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RETIREMENT PARTY—A memorable party was given Arthur Mullin recently upon his retirement from a 25-year career with the Indiana Farm Bureau. The party, held in Indianapolis, was attended by scores of friends with whom he has worked during his career in the farm chemical field. From left to right, are Mrs. Mullin; Alf Norris, V. W. Norris & Son, Rushville, Ind.; Art Mullin and Tony Cascino, International Minerals & Chemical Corp., Skokie, Ill., master of ceremonies. A "this is your night" type of program reviewed the high points of Mr. Mullin's career. He and his wife were presented the silver serving set shown in the foreground.

Southwestern Agrochemical Corp. Acquires Assets of Kerley Chemical, Arizona Firm

CHANDLER, ARIZ. — Announcement of the acquisition of the assets of the Kerley Chemical Corp. of Arizona by Southwestern Agrochemical Corp., Chandler, Ariz., and the merger of the two organizations was made jointly on Dec. 28, by Duncan A. Sim, general manager of Southwestern Agrochemical Corp., and R. V. (Bob) Kerley, president of Kerley Chemical Corp.

The merger, which became effective Jan. 1, 1961, gives Southwestern Agrochemical Corp. sales of about $5½ million annually. Mr. Sim will continue as general manager, and Mr. Kerley will become sales manager.

Kerley Chemical Corp. has been a manufacturer of insecticides and ammonium polysulphide at its plant at Kyrene, Ariz. The company also distributed ammonia and other fertilizers throughout central Arizona.

Southwestern Agrochemical Corp. is the only basic manufacturer of fertilizers in Arizona. The company operates a sulfuric acid and ammonium phosphate plant at Chandler, together with an 80 ton a day ammonia plant through Southwestern Nitrochemical Corp., an affiliated company.

According to company spokesmen, the combined production facilities will turn out the most complete line of agricultural chemicals produced in Arizona and the Southwest. The company distributes in Arizona, New Mexico, West Texas, Imperial County of California, and Mexico.

Arkansas Plant Food Society Elects Rex Morgan

LITTLE ROCK, ARK. — The Arkansas Plant Food Educational Society concluded its 10th annual conference here Friday, Jan. 6, with the election of Rex L. Morgan as president for the ensuing year. Mr. Morgan is executive vice president of the Ark-Mo Plant Food Co., Walnut Grove.

Other new officers: A. L. McQuary of Delta Fertilizer Co., Helena, vice president, and L. A. Dhonau of the Arkansas Plant Food Co. at North Little Rock, secretary-treasurer.

Mr. Morgan succeeds Zack Calhoun of the Southern Cotton Oil Co. at Little Rock.

Mr. Morgan said plans for 1961 include more research in the proper use of fertilizer, expansion of the soil testing program and a bigger educational program among farmers.

Pesticide Product Use Increases in Canada

OTTAWA—Sales of pest control products in Canada in the period ending Sept. 30, 1960, as reported by Canadian registrants were valued at $27,032,451, an increase of 6.3% over the $25,322,972 reported for the same period the previous year. A breakdown of these totals by group with the previous year shown in parentheses is: agricultural dusts and sprays, $9,871,727 ($9,630,141); livestock treatments, $1,888.894 ($1,747,858); herbicides, $8,396,160 ($7,608,144); household and industrial insecticides, $5 785.146 ($5,404,943); rodenticides, $510,599 ($446,886) and unspecified $580,000 ($485,000).

Chapman Chemical's Annual Clinic Scheduled

MEMPHIS, TENN. — The second annual Chapman Agricultural Chemical Clinic, scheduled to be held here Jan. 24-25, will offer instructions in the proper use of agricultural chemicals. Authorities from major chemical manufacturing companies will participate in the clinic.

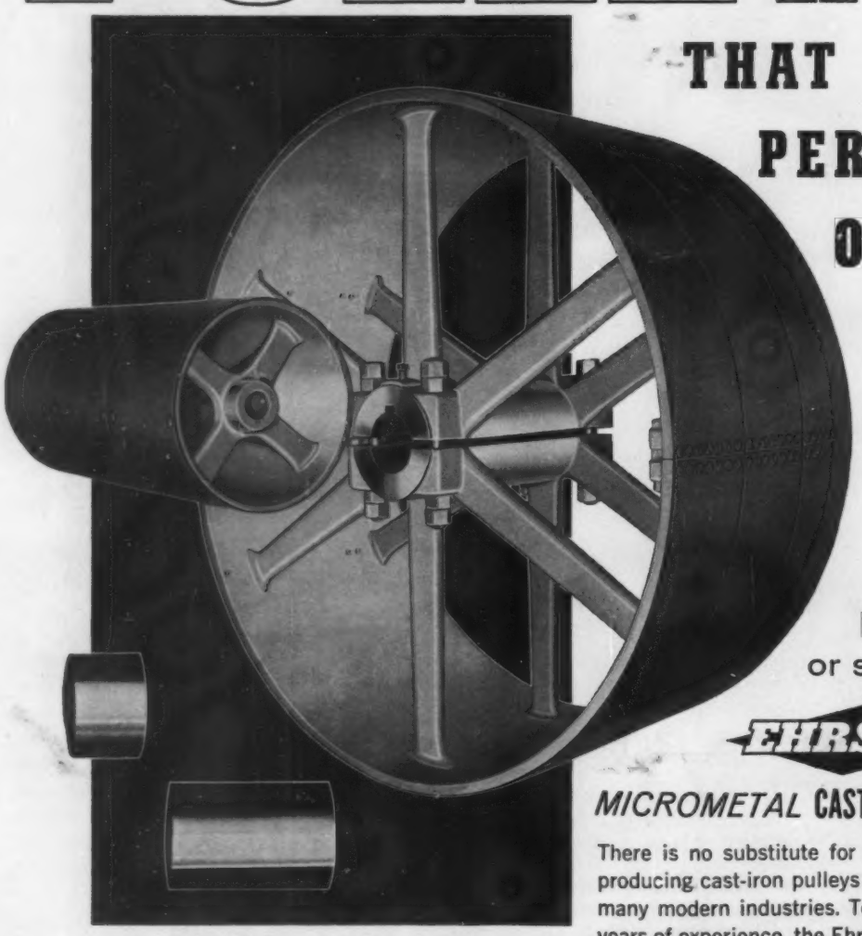
According to Robert J. January of Chapman Chemical Co., sponsor of the clinic, the two-day meeting will be held in the North Hall of Ellis Auditorium in Memphis. He said an adjoining room in the auditorium building will be used for equipment displays.

Mr. January added that clinic speakers, all authorities on specific products, will discuss how and when to apply chemicals for best results on cotton, soybeans, rice, corn, pastures and other crops.

Iowa Branch Operation

OTTUMWA, IOWA — Ke-Wash Fertilizer Co. of Keota, Iowa, has rented the former Ottumwa Iron Works building and opened a branch office operation here, with Ralph Boone as district manager. The company will sell at retail here and will also warehouse supplies for distribution to dealers in ten counties. The company manufactures chemical fertilizer at its plant in Keota. Howard Greiner of Keota is president. An open house at the Ottumwa plant is scheduled for February 1, 2 and 4.

PULLEYS



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Panel Discussions on Chemical Herbicides To Feature California Weed Control Talks

SACRAMENTO — Latest developments in weed control will be presented at the annual California Weed Conference to be held Jan. 24-26 at the Californian Hotel, Fresno.

Highlights of the meeting will include a presentation by J. Earl Coke, vice president of the Bank of America, and a panel discussion of "What's New in Weed Control."

Other speakers scheduled to appear on the program are Stanley W. Strew, Colloidal Products Co., Sausalito, California Weed Conference president; Walter S. Ball, California State Department of Agriculture, chairman of the conference, and T. C. Fuller, also from the state department of agriculture, Sacramento.

A panel discussion on weed control in various crops will be led by Dr. F. MacLeod, Food Machinery and Chemical Corp., Fresno. Appearing on the panel will be Jack Hurt, assistant manager, California Planting Cotton Seed Distributors, Bakersfield; John Miller, U.S. Department of Agriculture, Shafter, and Curtis D. Lynn, farm adviser, Fresno.

The panel is to continue after a noon recess with comments from Bill Fischer, farm adviser, Fresno; C. Larry Foy, University of California, Davis; Lauren M. Burtch, Spreckels Sugar Co., Woodland; Dave Bayer, University of California, Davis, and Dean Donaldson, California Packing Corp., Berkeley. Dr. MacLeod will summarize the panel.

The 1961 conference is scheduled to conclude with a talk by Ed Swift, University of California, Berkeley, on "The Residue Picture with Herbicides."

West Virginia Reports Earnings Down for 1960

NEW YORK—Although 1960 sales attained a record level for the eighth year in a row, West Virginia Pulp & Paper Co.'s earnings fell 6% below 1959 because of the softening in the general business situation and heavy start-up expenses of a new paper machine, David L. Luke, president, told stockholders in the company's annual report released Jan. 6.

For the year ended Oct. 31, Mr. Luke reported that sales advanced from $233 million to more than $250 million, while earnings declined from $11.8 million to $11 million in 1960. After preferred dividends, earnings for 1960 were equal to $2.07 per share, as against $2.21 per share in 1959.

Herbicide Regulations Amended in California

SACRAMENTO — The California State Department of Agriculture has amended its regulations pertaining to use of agricultural chemicals.

Regulations governing the use of 2,4-D and other herbicides were amended to permit their application in high-volatile form in an area around Shandon in San Luis Obispo County as they are now used in the adjacent area in that county.

The regulations were also changed to remove an additional portion of Merced County from the hazardous area. This will authorize application of these herbicides by aircraft in that new area later than March 15, the deadline heretofore in effect.

Dr. James T. Ralph, director of agriculture, said these amendments were the subject of a public hearing in Paso Robles on Nov. 16, and continued in Merced on Nov. 21, 1960 The amendments were made in response to petitions received from interested persons.

PESTICIDES

Continued from page 2

exports during the first six months of 1960, according to the report. Totals came to $54,853,309, representing an increase of 11.8% over the 1959 period. The ten countries receiving the largest shipments, by value for this period were: India, $13,204,145; Canada, $8,997,397; Brazil, $3,109,635; Mexico, $2,762,358; Colombia, $2,476,991; Egypt, $1,829,690; Cuba, $1,791,534; Venezuela, $1,764,651; Honduras, $1,040,284, and Japan, $1,020,011.

Anhydrous Production Up First 3 Quarters of 1960

WASHINGTON—Output of anhydrous ammonia was nearly 9% greater during the first three quarters of 1960 than in the same period of the previous year according to a report just issued by the U.S. Department of Commerce, Business and Defense Services Administration in its industry report.

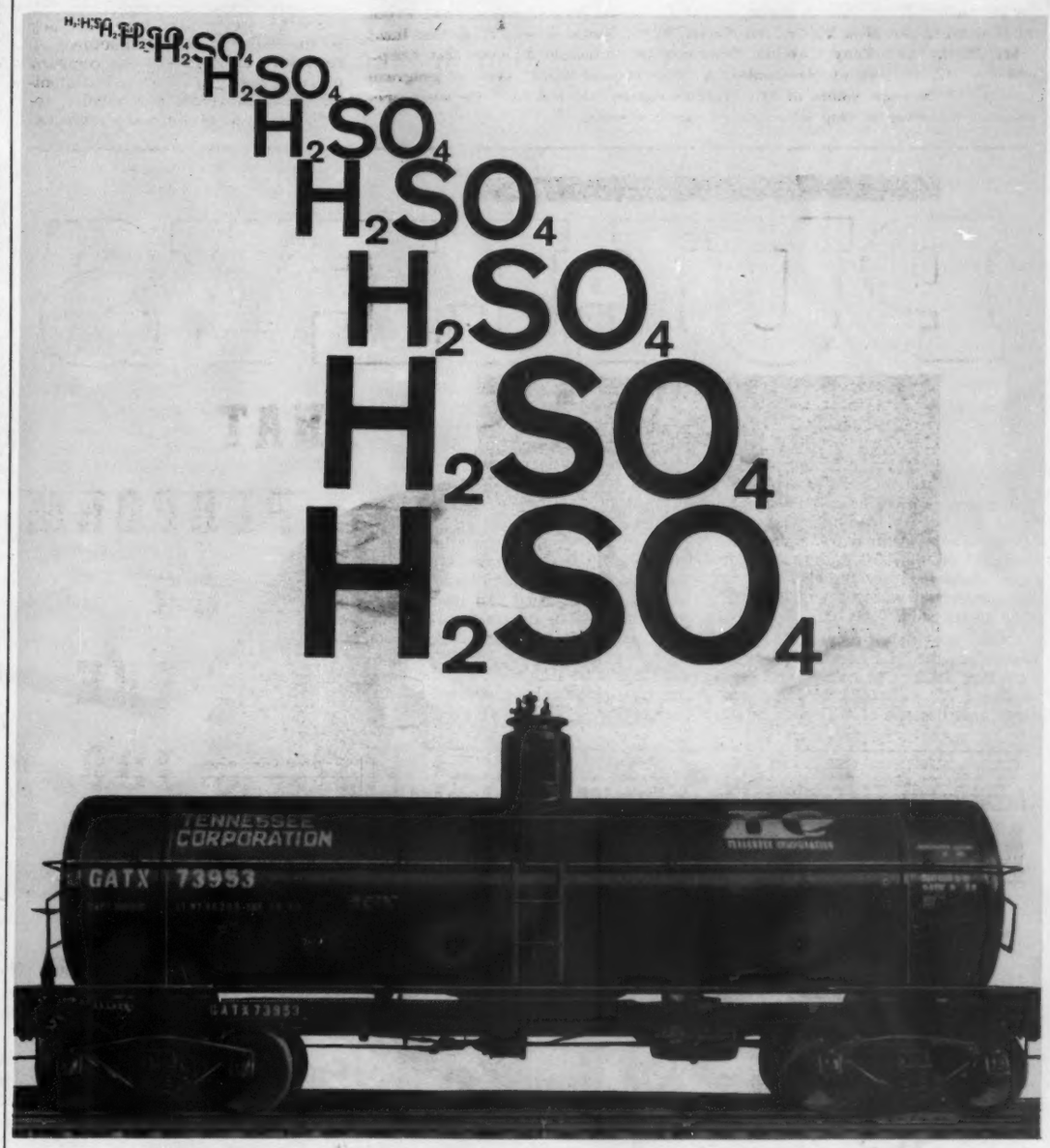
Sharing in the greater 1960 activity were major derivatives of ammonia, including nitric acid, ammonium nitrate, nitrogen solutions, and ammonium phosphates, the report said. However, synthetic ammonium sulfate and urea lagged somewhat behind 1959 production rates, but imports of these items have increased and may have replaced domestic materials to some extent.

Total estimated consumption of ammonia for production of the principal derivatives, although up during 1960, did not quite keep pace with total disappearance. (Production, plus change in producers' stocks.)

The report says that much of the 1960 increase probably was shipped as anhydrous ammonia and aqua ammonia for direct application. During the 1958-59 year, 785,000 tons of anhydrous and aqua ammonia were consumed for direct soil application, but consumption during the 1959-60 year may have exceeded 900,000 tons, it says.

RETIRED SECRETARY DIES

ATLANTA — John A. Becker, retired secretary and comptroller of Armour Fertilizer Co., died recently in a private hospital in Atlanta following an illness of several weeks. Burial was in Atlanta. He was a native of Baltimore.



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Manufacturing Fertilizer from Sewerage Waste Has Its Headaches, Milwaukee Says

MILWAUKEE, WIS.—Whereas the City of Milwaukee some ten years ago realized a modest profit from the sale of fertilizer made from sewage sludge, the operation now costs the city's metropolitan sewerage district some $5.98 to dispose of a ton of the plant food, according to an article appearing recently in a Milwaukee newspaper.

However, Raymond D. Leary, chief engineer and general manager of the district's disposal plant says that the "profit and loss" terminology of his operation is not completely accurate. His business, he points out, operates under tough conditions. He is unable to control his production, for one thing. Any sewage disposal system is eventually faced with the problem of disposing of waste materials, he says. Some systems burn it, some dump it in the sea, and others seek different means of disposal. The newspaper account of the situation continues:

"Milwaukee's disposal plant was the first in the country, back in 1925, to manufacture a fertilizer and dispose of it on the open market as an answer—and for years a lucrative one—to the problem of disposal.

"In recent years, however, developments in the fertilizer industry and the rising operating costs at the disposal plant have affected the net return on 'Milorganite' sales.

"A price rise," Mr. Leary said, "has been advised against by the 60 distributors who handle 'Milorganite' because of increased competition.

"Rising costs have resulted from increases in plant labor wages, and in the costs of packaging acids and insurance," Mr. Leary said.

"A third factor affecting 'Milorganite' sales is that the metropolitan sewerage district, as a public body, does not feel it can mount an aggressive sales campaign. Its net sales income of $2,750,000 from 'Milorganite' sales is accounted for by an investment in sales cost of $50,000," Mr. Leary said.

"We are not in business as a manufacturer," he added. "We are a sanitary facility to collect and treat sewage. We must dispose of it some way, and because of a 35 year capital investment, we are required to dispose of it as a fertilizer.

"The question of an alternative method of disposal—one which might be less costly, if not profitable—is a complicated one." Mr. Leary indicated that, "if not saddled by the $10 million tied up in the plant necessary to produce 'Milorganite,' it would be better for the district to burn the waste.

"In fact, the new disposal plant now under construction at Puetz Rd. in Oak Creek will not make fertilizer. It will dump waste solids into a lagoon and perform the disposal task 50% cheaper than the main plant does even though it is getting no cash return in the process.

"Even though scrapping the 'Milorganite' operation at the main plant would mean writing off a large capital investment, it is possible that the decision to do so could be made in future years.

"The decision would rest on a careful analysis of the costs of making and selling 'Milorganite' compared with burning the waste solids.

"When the net cost of making and selling 'Milorganite' starts to approach the cost of incineration," Mr. Leary said, "we will shift to it."

The cost of the present operation has been going up at the rate of about $1.25 a ton for the last five years, Mr. Leary said. If the present $5.98 a ton cost begins to approach $15 a ton, the present cost of burning the wastes, the shift would be made.

However, the cost of burning is also increasing. In fact, the cost of incineration is rising for almost the same reasons that the cost of "Milorganite" disposal is rising—labor, maintenance, power, fuel, water and insurance price increases.

"It would take two years to make the shift," Mr. Leary said, "but it could be planned so that no interruption occurred in plant operations. Not all the equipment at present devoted to 'Milorganite' operations would have to be scrapped. An investment of $2 million in dryers used in the manufacture of 'Milorganite' would definitely be lost, but the filter now used could be retained, and the drying house could be converted to an incinerator."

TIME HANGS HEAVY—William Earl, sales manager of Prater Pulverizer Co. appears to feel the weight of time as he holds oversize timepiece presented by George F. Thomas, right, Prater president, in observance of Mr. Earl's 14th anniversary with the company. Mrs. Earl, left, appears willing to help hold the heavy chain.

New Mexico Considers Additional Taxes to Include Fertilizers

SANTA FE, N.M. — Faced with a severe shortage of school funds, the New Mexico Legislature will consider extension of sales taxes to feed and farm chemicals this month.

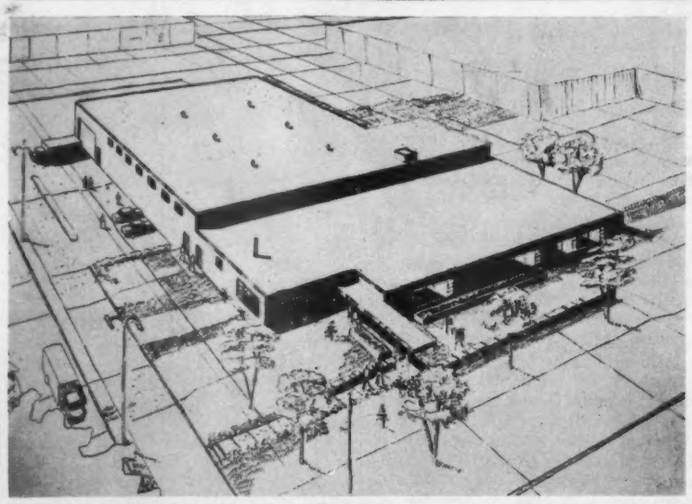
The Governor's Commission on Educational Finance reports that school costs will run ahead of present revenue sources by about $17 million a year. To narrow the gap, the Commission lists a number of "possible revenue sources" such as increased sales taxes, state income taxes, land rentals, pari-mutuel taxes, and so on.

"Areas of exemption might also be considered," says the commission's report. "Sales of livestock, feed, seed, fertilizers, insecticides and farm machinery, except for tractors, are exempt from the school tax." The Commission did not recommend lifting this exemption, but merely listed the possibility as one source of additional funds.

Since the commission lists a one-cent increase in statewide school tax, the levy on feed and fertilizer could possibly increase from the present zero to 3% in rural areas and 4% in some of New Mexico's cities.

NEW IOWA PLANT

STORY CITY, IOWA—Consumer's Cooperative Assn., Kansas City Mo., will operate a new fertilizer plant under construction here, with completion date April 1. The plant will prescription mix fertilizer according to recommendations of the soil test laboratories of Iowa State University. The dimensions of the new structure will be 43 x 85 ft.



NEW WAREHOUSE—American Cyanamid Co. has enlarged its regional branch office and warehouse building at Minneapolis. Architect's drawing of the new facility is shown above.

Cyanamid Enlarges Midwest Warehouse

MINNEAPOLIS, MINN. — American Cyanamid Company's regional branch office and warehouse building here is being enlarged substantially, it was announced by Paul Will, local branch manager.

The wing being added is about one-third of the present 20,000-square-foot facility. It will provide space for headquarters of a newly-established Cyanamid agricultural division Westcentral sales region.

L. P. Zapalac, newly appointed regional sales manager for the agricultural division, cited the substantial growth of the regional farm economy since 1954, when Cyanamid moved into its present Twin Cities building.

"Cyanamid has sought to keep pace with the upper midwest's demand for chemical aids to agriculture. Today some 500 different products, ranging from animal feedstuffs, poultry and veterinary compounds to pesticides, will be moving through the Twin Cities branch to customers in Minnesota, Iowa, Wisconsin, North and South Dakota, and Nebraska," Mr. Zapalac said.

According to Mr. Will, the Twin Cities branch office, with 30 employees, also serves as area sales and distributing headquarters for other Cyanamid divisions.

Cyanamid, with headquarters in New York, operates 41 plants and 35 branch offices throughout the U.S. The company conducts research in and manufactures some 6,000 products including pharmaceuticals, biologicals and antibiotics, fertilizers, insecticides, fumigants, and industrial chemicals.

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FORMULATION

Continued from page 5

lated with heavy aromatic naphtha which is slightly more hydrophilic than kerosene. Xylene is significantly more hydrophilic than heavy aromatic naphtha. For this reason, emulsifiers for heptachlor 2-3.3 lb. per gallon concentrates have similar emulsifier balances to those for chlordane, depending on the heptachlor solvent.

Heat is not generally required to formulate liquid chlordane concentrates. However, to hasten the solution of heptachlor, heat should be supplied to the mixing tank preferably from a steam jacket around the mixing kettle. Alternatively, a steam coil fitted into the kettle may be used to supply heat. Agitation should always be used to avoid local overheating and, of course, to assure uniform blending of all ingredients. For the discharge line a basket filter should precede the pump and before filling or packaging all liquid concentrates should be "polished" by a fine-screen line strainer or a plate type filter.

A complete description of all technical factors relating to the formulation of chlordane and heptachlor is obviously beyond the scope of this paper. It is hoped, however, that the information presented will direct the reader toward some of the reasons for choosing proper raw materials to be used and the preferred methods for their incorporation into high quality chlordane and heptachlor products.

Illinois Fertilizer Conference Scheduled

URBANA, ILL.—The annual Illinois Fertilizer Industry Conference has been scheduled for Feb. 2 in the Bevier Hall Auditorium on the University of Illinois campus, according to S. R. Aldrich, U. of I. agronomist.

The following program has been arranged with University staff members participating:

"Soil Testing in Illinois" by J. C. Laverty; "Fertilizer Recommendations from Soil Tests," S. R. Aldrich; "Turf—A New Look at an Old Crop," M. P. Britton; "Progress Report on Bulk Fertilizer Research," Dave Larson; "Fertilizer Nitrogen Efficiency," L. T. Kurtz; "The Illinois Fertilizer Law," M. B. Russell.

After lunch, a panel of Illinois soil scientists will discuss the subject, "Illinois Soils: Media for Plant Growth." Panel members will be R. T. Odell, S. W. Melsted, M. B. Russell, and B. R. Sabey.

NEWCC ELECTS OFFICERS FOR 1961

NEW YORK — The Northeastern Weed Control Conference has elected as president, Lawrence Southwick, project leader in the agricultural chemicals development section, of Dow Chemical Co. Other officers were named as follows:

D. A. Schallock, weed control specialist, Rutgers University, vice president; P. W. Santelmann, assistant professor of agronomy, University of Maryland, secretary, and John Meade, assistant professor of agronomy, University of Maryland, treasurer.

The Northeastern Weed Control Conference represents a group of university and business scientists concerned with the problem of control of unwanted vegetation. The conference is composed of 47 sustaining member companies from industry and all land grant colleges in the northeast United States.

Mr. Southwick is a graduate of the University of Massachusetts. He joined Dow in 1945, following service with the Agricultural Experiment Station of the University of Massachusetts. He has been in charge of herbicide development since he joined Dow.

Southern Weed Group Announces Program

ST. PETERSBURG, FLA. — The Southern Weed Conference will open its 14th annual meeting here Jan. 18-20 with a general session on "the challenge of weed control—past, present and future."

Expected to attract 400 members from the Southern states and visitors and speakers from other sections, the meeting will be held at the Soreno Hotel, according to E. W. Hauser of Experiment, Ga., program chairman.

The group will be welcomed by Marvin A. Brooker, dean of the College of Agriculture, Gainesville, Fla. R. A. Darrow of College Station, Texas, president of the conference, will launch the general session with the annual address.

Other speakers for this session will include David W. Staniforth, Iowa State University, "Crop-Weed Ecology in Relation to Weed Control Research;" Paul Y. Burns, Louisiana State University, "Weed Control in Timberlands;" W. B. Ennis, Jr., U.S. Department of Agriculture, Beltsville, Md., "Weed Investigations—Progress and Potential," and Dale E. Wolf, E. I. Dupont, Atlanta, "Industry's Responsibilities."

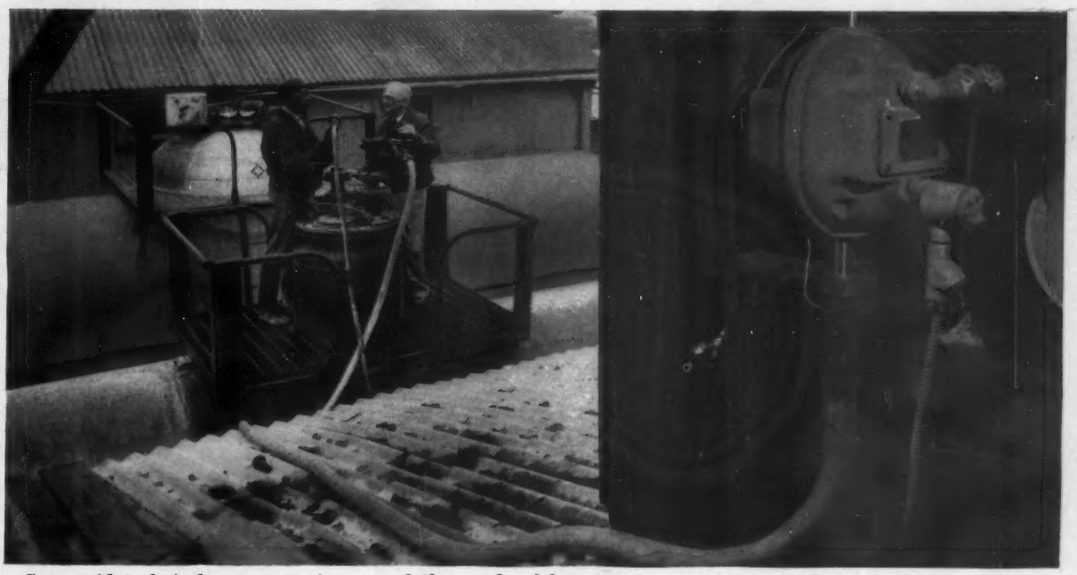
Following the general session, conferees will divide into groups for discussions of such topics as: weed control in agronomic crops; horticultural crops; weed control for highways, utilities, etc.; aquatic and special weed problems, and extension and public health aspects.

W. K. Porter, Baton Rouge, La., vice president, will present the report of the research committee during the afternoon session on Jan. 19.

To Represent Line of Sprayfoil Equipment

BLOOMINGTON, MINN. — Sprayfoil Corp. of Bloomington has appointed Dee C. Jennings as sales representative to call on distributors throughout the U.S. and Canada to introduce the firm's new-type atomizing spray equipment. In a joint announcement by Orrin Johnston, president, and Zach Wipf, sales manager, it was pointed out that the company's present offerings include a livestock spray gate, a utility sprayer and field sprayer, with addititonal items to be introduced later.

Dee C. Jennings



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Services you can use

Traffic Service: Cyanamid traffic specialists are ready to route and ship your orders without delays. Their knowledge can save you money and can make your operation run even more efficiently.

Technical Service: Cyanamid's staff of technical experts are on 24-hour alert. Often, what are new problems to you are solved problems to them. Make your formulation and production problems theirs. That's their job.

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Products that serve: Cyanamid's only phosphate business is mining and manufacturing the highest quality products for your mixed fertilizer requirements.

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Poland Reported All Set For Big Output of Sulfur

WORD FROM abroad has it that Poland is about to shoulder its way into the world's sulfur market with a multi-million dollar mining and processing complex on the site of Europe's largest sulfur deposits. A sort of crash program is transforming the backward peasant community of Tarnobrzeg into a bustling nerve center of the most technologically advanced industry in Poland, reports say.

Polish engineers have predicted that they will be producing about 130,000 tons of pure sulfur next year and more than 500,000 tons in 1965. Western estimates have put the ultimate capacity of the mine and processing plant at a peak of 3,000,000 tons annually by 1970.

The entire facility will be automated eventually and will employ about 3,000 persons, reports say. Polish engineers have predicted privately, that the new mine and processing unit will outproduce the Soviet sulfur industry. The Poles also observe that the Russians are "technologically out of date."

The Polish Communist regime has reportedly poured enormous resources into the sulfur project. More than 1,200,000,000 zlotys ($300 million) have been invested in the project since work began in 1957. Further development is expected to cost an additional 3,500,000,000 ($870 million).

How much of a dent such a new source of sulfur might make on the world market is problematical. Obviously, if announced plans work out, the introduction of sulfur in the quantity indicated would certainly be felt by producers in the U.S.

Various Polish experts have expressed belief that the over-all increase in fertilizer manufacturing in Europe and elsewhere will justify the large expenditures being made for sulfur production. One Pole, Dr. Przemyslaw Hoffman, professor of chemistry at the Polish Academy of Sciences, sees greatly increased demands for sulfur particularly in the fertilizer industry, and says that existing suppliers in the U.S., Mexico, France and Italy will not be able to keep up with the increased need.

Rising demand for sulfur has indeed been confirmed in the U.S., but American suppliers are meeting the demand very well. Year-end reports indicate that sulfur consumption has risen for the past two consecutive years, with 1959 use being 11% over that of 1958, and the 1960 tonnage being greater than that of 1959.

Probably the area in which the pinch may be felt most is in exports from the U.S., which in 1960 were estimated to total 1,700,000 tons. This figure was 100,000 tons higher than that of 1959.

Beyond the production of sulfur itself in Poland and other countries, is the indication that this means stepped-up output of other plant food products and thus greater competition abroad.

The fertilizer manufacturing industry will want to keep an eye on these developments abroad. Some of these events can cast long shadows.

Life of Supervisor Not Exactly a Bed of Roses

SUPERVISORS in the plant are sometimes regarded by the men under them as fellows with nothing in particular to do. It is therefore sometimes difficult to get the point across that supervisors DO have not only "something to do," but in addition to that, carry a big weight of responsibility on their shoulders.

Perhaps the best portrayal of what a supervisor does was presented in the handbook issued by International Minerals & Chemical Corp. In connection with its recent series of production clinics. Though written with a humorous twist, the description is far from being exaggerated:

"As nearly everyone knows, a supervisor has nothing to do except to decide what is to be done; tell somebody to do it; listen to reasons why it should not be done, why it should be done by someone else, or why it should be done in a different way; to follow up to see if the thing has been done; to discover that it has been done incorrectly; to point out how it should have been done; to conclude that as long as it has been done, it may as well be left where it is; to wonder if it is not time to get rid of a person who cannot do a thing right; to reflect that he probably has a wife and a large family, and that certainly any successor would be just as bad, and maybe worse; to consider how much simpler and better the thing would have been done if one had done it oneself in the first place; to reflect sadly that one could have done it in twenty minutes and, as things turned out, one has to spend two days to find out why it has taken three weeks for someone else to do it wrong."

How does this description check with your own experience as a supervisor?

A Change for Croplife

Effective with this issue, Croplife is revising its circulation to concentrate its industry coverage entirely on the management and production personnel in the agricultural chemical industry. To effect the change, retail dealers will be dropped from the circulation list, and Croplife will become a monthly publication.

This change is the latest in a series which was charted in 1958 when The Miller Company—publisher of Croplife—started Farm Store Merchandising as a specialized monthly for operators of retail farm supply stores. A year later, as part of the scheduled Croplife transition, the Production Edition was started with editorial concentration on the management and production personnel.

The acceptance of Farm Store Merchandising as a complete medium for servicing retail farm supply dealers—including those handling agricultural chemical products—and of the Croplife Production Edition as a specialized business paper for management and production personnel in the agricultural chemical field, have now resulted in this latest Croplife change.

Look Ahead-Work Ahead-Come Out Ahead in '61

Croplife's Home Office

Croplife®

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NBP — *Member of National Business Publications*

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Donald Neth, Managing Editor

John Cipperly, Washington Correspondent

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Jan. 17-18—Eleventh Annual Fertilizer Dealers Training Conference, Pershing Municipal Auditorium, Lincoln, Neb.

Jan. 19-20—14th annual Southern Farm Forum, Roosevelt Hotel, New Orleans, La.

Jan. 23-25—Southeastern Branch, Entomological Society of America, 35th annual meeting, Admiral Semmes Hotel, Mobile, Ala.

Jan. 23-27—Annual Purdue Pest Control Operators' Conference, Purdue Memorial Center, Lafayette, Ind.

Jan. 24—Discussion on current recommendations for the control of pests in Kentucky, Room 232, Agricultural Experiment Station, University of Kentucky, Lexington, Ky.

Jan. 25-26—Custom Spray Operators' Training School, 13th annual meeting, University of Illinois, Urbana.

Jan. 26-27—Colorado Agricultural Chemicals Assn., annual meeting, Cosmopolitan Hotel, Denver, Colo.

Jan. 25-26—Symposium on "Effects of Environment on Crop Response to Fertilizers," Tennessee Valley Authority Fertilizer Development Center, Muscle Shoals, Ala.

Jan. 25-26—Nebraska State Weed and Insect Conference, National Guard Armory and Pawnee Hotel, North Platte, Neb.

Jan. 31-Feb. 1—Agricultural Industries Forum, annual meeting, Urbana, Ill.

Feb. 1-2—Soil Science Society of North Carolina Annual Meeting, Williams Hall, North Carolina State College, Raleigh, N.C.

Feb. 2—Illinois Fertilizer Industry Conference, Bevier Hall Auditorium, University of Illinois, Urbana.

Feb. 6-8—58th annual meeting, Association of Southern Agricultural Workers, Agronomy Section, King Edward Hotel, Jackson, Miss.

Feb. 8-10—Annual lime and fertilizer conference, Pennsylvania State University, University Park, Pa.

Feb. 9-10—Executive Committee meeting, Fertilizer Section, National Safety Council, Colonial Inn, St. Petersburg, Fla. Ansel I. Raney, Phillips Petroleum Co., Bartlesville, Okla., chairman.

Feb. 14-15—Second Annual Aquatic Weed Control Society meeting, LaSalle Hotel, Chicago.

Feb. 14-16—Eighth annual agricultural chemicals conference, Texas Technological College, Lubbock, Texas. Drs. A. W. Young and Donald Ashdown, Texas Tech., program co-chairmen.

Feb. 15—"Pesticides Review for Coastal Counties," sponsored by Western Agricultural Chemicals Assn. and California State Polytechnic College, on campus, San Luis Obispo, Cal.

Feb. 16-17—Annual joint meeting, Midwest Industry - Agronomists, Edgewater Beach Hotel, Chicago.

Feb. 28-March 1—Tenth annual Pesticide Chemicals School, sponsored by Clemson College, Clemson House, Clemson, S.C.

March 3—Midwest Agricultural Chemicals Assn., Omaha, Neb.

March 13-15—Western Agricultural Chemicals Assn. Spring Meeting. Disneyland Hotel, Anaheim, Cal.

March 22-24—North Central Branch meeting, Entomological Society of America, Hotel President, Kansas City, Mo.

June 27-29—Twelfth Annual Fertilizer Conference of the Pacific Northwest, Marion Hotel, Salem, Ore. Chairman: B. R. Bertramson, agronomist, Washington State University, Pullman.

July 19-21—Southwest Fertilizer Conference and Grade Hearing, Galvez Hotel, Galveston, Texas.

Nov. 2-3—Pacific Northwest Plant Food Assn. annual convention, Hotel Gearhart, Gearhart, Oregon.

Nov. 7-10—Packaging Machinery Manufacturers' Institute Show of 1961, Cobo Hall, Detroit, Mich.

Chipman Establishes Midwest Sales District

BOUND BROOK, N.J. — Chipman Chemical Co., Inc., has announced the establishment of a new sales district which includes the states of Minnesota, North Dakota, South Dakota and part of Wisconsin. Donald Horne has been appointed manager of this district, with offices located at 786 North St. Albans St., St. Paul, Minn., where the company also has a manufacturing plant.

Mr. Horne has been with the company for over six years, serving the agricultural trade and more recently as railroad sales representative in this same area. He will now be in charge of agricultural, industrial and railroad sales.

CALENDAR FOR 1961

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Classified advertisements accepted until the fifth of each month for that month's issue.

Rates: 20c per word; minimum charge $3.00. Situations wanted, 15c a word; $2.25 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 25c per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of $12 per column inch.

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Field Research positions available in a progressive and expanding program in the development of agricultural chemicals. Ph.D. or equivalent plus experience in Animal Husbandry and/or Entomology desired. Must have interest in and have worked with livestock. Position will require energetic participation and prime responsibility of research program coordination within a Northwestern or North Central area. Opportunity for advancement considered excellent. Send details of education and experience to:

CHEMAGRO CORPORATION
Supervisor of Field Research
P.O. Box 4913, Hawthorn Road
Kansas City 20, Missouri

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New Plant to Utilize Tailings from Mine

CALIENTE, NEV. — A fertilizer plant to process tailings from the Combined Metals Reduction Co. mining operation is expected to be in operation by the first of February, according to Robert W. Dalton of R. J. Dalton & Sons, Inc., Kingman, Ariz., owner of the facility.

Speaking at a meeting of the Lincoln County Rural Development Committee here, Mr. Dalton said the plant plans to employ six to eight men at the beginning and may hire some 20 during peak production times.

Finished product of the plant will be an agricultural additive to help control clay and alkaline soils by oxidizing with water and ground conditions, he said. An estimated 300 tons of the product will be produced daily. The plant will process tailings of the CMRC Mining Operation at Caselton, near Pioche. CMRC has headquarters in Salt Lake City.

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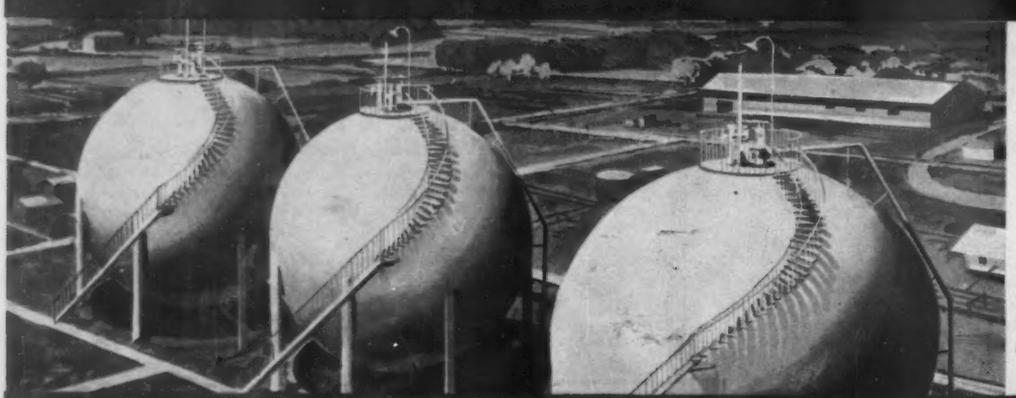

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